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ESSAY ON DISEASES OF ANIMALS TRANSMISSIBLE TO MAN.

BY BORTH.

MR. CHAIRMAN AND GENTLEMEN,—I have chosen this subject for my essay—

I.—Because I think it is a very important question, that veterinary surgeons should beware and not go into unnecessary contact with animal diseases which they know to be contagious and transmissible.

II.—Because it has now for many years caused considerable controversy, both in the veterinary and medical professions; and only of late years several of the most contagious and infectious diseases were acknowledged to be transmissible to man.

III.—Because several of the diseases which are transmissible to man, are fatal, and are the scourge and opprobium of our nineteenth century civilization. I deem it advisable to divide my essay for convenience into three sections, viz.:—

i. Diseases transmissible by contact or association with diseased animals.

ii. Diseases caused by animal parasites which may be transmitted to man by means of meat.

iii. Diseases caused by vegetable parasites or germs which may be transmitted by means of meat or milk.

i. Diseases transmissible by contact or association with diseased animals.

Ringworm

is not connected, as the name might lead us to suppose, with the presence of an insect. It is due to a parasitic growth of fungus, made up of organic cells, which affects more especially the hair follicles on the surface of the skin.

Definition.—Is a contagious, specific, parasitic disease;

due to the fungus growth on the skin, it grows into the skin, and it causes the hair to fall off, and a more rapid growth of epithelial scales. It commences in different parts, on different animals, but generally on the head, viz., on the face and about the eyes—that is, in cattle; but in cats they say it commences about the fore-paws, after which the head and any part of the body may become affected; the patches increase in size, and cause great irritation; thus the animal scratches itself. A very satisfactory explanation in the case of the cat, that the disease first attacks the paws, is that this kind of ringworm is not uncommon among rats. Therefore, it is very probable that the parasite is caught by cats from mice that they have killed, and also that an affected cat might transmit the disease to other cats, and also that cats might transmit it to children and household family. The dog is also subject to ringworm, though less frequent than cats. In cattle, the disease is also very common, especially young cattle. It is also occasionally met with in the horse. Every-one of these animals transmit it to man by contagion.

Dogs and cats with mange or ringworm, or any contagious skin disease, ought on no account be allowed access to rooms inhabited by human beings, or even with other animals, but kept under strict isolation.

It is well to take other precautions, such as washing the hands and arms with carbolic soap after each occasion of contact.

Mange, Scab, or Itch.—The history of this scabious disease dates as far back as 1,300 years before the Christian era, but the accounts are so vague and ill-defined that their association with certain animals fails to afford reliable data for scientific discrimination and treatment. The disease of one animal was frequently supposed to be communicable to others of an opposite genus, as from sheep to the horse. This does not agree with the investigations of the present day.

There are several kinds of these parasites, differing among themselves in size, shape, and situations, viz.:—

i. The sarcoptes, which burrow into the skin.

ii. The dermatodectes, which simply bite and hold on to the skin.

iii. The symbiotes, which do not pierce farther than the cuticle.

The first of these, viz., the sarcoptes, are the most important, because they are deep-seated and cause the greatest irritation, and also the most difficult to kill, and being the most frequent transmissible to man. Horse, ox, dog, and cat are all liable

to mange caused by the itch parasites, and they are very hard to distinguish except by difference in size in different animals. There are almost innumerable instances on record of the disease having been transmitted from animals to man. Students have not infrequently contracted the disease from dressing the skin of mangy dogs. The cat is frequently the subject of mange, as we very often see the hairs fall off the head and upper part off the neck, and thus transmissible to many of the household family.

Prevention.—Contact of any kind with cats or other animals that have unhealthy-looking skins ought to be avoided (the same as ringworm).

Hydrophobia or Rabies.

Of all the ills that flesh is heir to in the way of disease, the most appalling is hydrophobia. Death, though terrible in all its kinds, varies in this respect as to degree, but it reaches its highest degree when it is due to this cause. Fortunately, it is a rare one, and with which we, as veterinarians, are interested. Although the disease was known to the ancients, it is only of late that correct notions regarding its mode of origin and transmission have been arrived at.

Cause.—The cause is by inoculation by a specific animal poison. How this particular animal poison originated is unknown, as of all other fevers and specific poisons which are concerned in the causation of infectious and contagious diseases. In everyday life, both of animals and of mankind, inoculation is almost invariably due to a bite from an animal which has already contracted the disease in a similar manner, and so *ad infinitum.* Under these circumstances it is the saliva that is the medium of inoculation; but saliva is not the only media, *e.g.*, other fluid and solid tissues. The virus has not yet been detected. As far as experiments have gone, they have proved that all warm-blooded animals are susceptible to rabies. Mammals and birds, by inoculation, have shown the symptoms.

It has, of course, long been known that the disease is transmitted to human beings by the bite of rabid dogs and other carnivrus animals, but it is only during the present century that this has been proved to be the only mode of transmission, whether among animals of the same species or from one species to another. There are some even now, and a great many, too, who believe the disease to have a spontaneous origin in the dog. Such causes as excessive heat and prolonged thirst were once regarded as common causes of

madness in dogs, and there is a popular belief that the disease is most liable to occur in July, hence called "dog days," due to heat, etc., but now, as the age is advancing, so are the investigations of man. Some authorities, and very eminent men in our profession, hold out that it has a spontaneous origin.

Well, now, the poison having been transmitted by a bite or inoculation, it produces pathological disturbances and changes after a variable period of latency: these are produced through the media of the blood, the brain and spinal cord being particularly involved, and the poison is in all probability thrown off chiefly by means of the salivary glands.

The disease in man is called hydrophobia, which seems to imply that actual fear or dread of water is a conspicuous symptom of the malady. This is true in man, but not in the lower animals. Symptoms in the human being seem to be somewhat as follows:—After a bite there may be no symptoms for a month or two, or even twelve months, during which time the poison lies latent in the system. At the end of the incubative period, the wound begins to itch and is excessively hot, the patient becomes feverish and very thirsty, the face is pallid and has a peculiar anxious expression, the muscles of the face are drawn and restless; the expression now amounts to one of actual terror or horror. The patient becomes more excited and has a characteristic habit of giving a side glance, as though looking out for some hidden danger; then delirium sets in, thirst increases, great difficulty to swallow, especially fluids, and after trying to swallow, the very sight of water suggests much terror, that as thirsty as the patient is, he is anxious to avoid it. Muscular tremors, followed by violent spasm of the muscles, set in, then convulsions; eventually the patient is slowly suffocated.

Treatment.—Excise wound and cauterise, carbolic (No. 3).

Prevention.—I think that it is possible, and should be stamped out of the country, and for this purpose such actions as (1) muzzling, for these reasons:—

i. That rabies never arises spontaneously.

ii. That it is a contagious inoculable disease.

iii. That it is almost invariably propagated by biting; destruction of all rabid dogs, and also all bitten and suspected animals; seizure of all dogs not under control or unmuzzled, and their destruction, within a given period, if not claimed.

Glanders and Farcy.

In respect of incurability and ease of transmission to human beings, glanders rank as one of the most important diseases common to man and animals.

They are not two distinct diseases, but are merely modifications of one and the same disease; the terms denote or designate the particular situation of the lesions. Glanders was known to the ancients, and we can tracé it as far back as Aristotle and other early writers under the name Morbus humidus, and its variety farcy as Morbus farcimosus.

Definition.—A malignant, contagious (and some authorities an infectious) and fatal disease, due to the presence of a virus (said by Dr. Struck, of Berlin, to consist of an organism, the Bacillus mallei. Up to recently it was supposed that the disease might arise spontaneously, but it is now generally admitted that it belongs to the class of "specific communicable diseases."

Principal Williams upholds that it has a spontaneous origin in the horse, ass, and mule, and is capable of transmission to man, in whom the virus seems to increase in malignancy; also to sheep, goats, dogs, and feline species, and even mice and rabbits. Cattle, pigs, and fowls are immune.

Glanders spreads through a stable of horses with more certainty than rapidity when once introduced by a diseased animal. With regard to transmission of the contagium of glanders, otherwise than actual contact; on this point opinions differ.

The specific poison has been introduced into the system both by the skin and mucous membrane. Professor Coleman has experimented on asses with virus obtained from man. He inoculated two asses with matter taken from the arm of a man labouring under the malady, which resulted from a puncture received in dissecting a glandered horse, and both asses died of glanders. We have experimental proof that glanders is easily communicated by inoculation, but we have no evidence that glanders is ever spread by inhalation. Direct experiment has failed to produce it by inhalation.

The Bacillus mallei is from 2·5 μ to 5 μ in length, and about $\frac{1}{3}$ to $\frac{1}{8}$ of their own length broad. It is usually straight, or slightly curved, is rounded at one end; in fact, the only difference between this bacillus and that of tuberculosis, that the mallei is slightly shorter, and perhaps thicker than the tubercle bacillus. It exhibits no movement. As regards

staining and mounting, I shall leave out, as the scope of my essay won't permit.

In the human subject inoculation may take place through wounds, or scratches, or through the application of the nasal discharge of a glandered animal to the mucous membrane of the nose, or mouth.

In man this disease usually takes on the form known as farcy. The skin is inflamed, nodulated, and ulcerated; abscesses are found in the muscles. In fact, in man the disease takes on the inflammatory character more distinct than in the horse.

Nodules, ulcers, and abscesses are found in the internal organs, causing the disease to simulate pyæmia.

Prevention.—It is most essential to attend to the ventilation, drainage, food and water, and to the cleansing and disinfection of the stables; lime-washing the walls and woodwork, the wash to contain a pint of crude carbolic acid to every bucketful. Other disinfectants can be used. Chlorine and carbolic acid are capital disinfectants, so are permanganate of potassium and corrosive sublimate.

Part II.

Diseases caused by animal parasites, which may be transmitted to man by means of meat. Parasites are scattered over every region of the globe; they choose their place, and observe, like all living creatures, the geographical distribution.

A parasite is one living at the expense of another, with some notion of harm—stealing from his host, but not, as a rule, killing him. Parasites do not always do harm to their hosts, but which render them, in return, precious services. Thus those which live on the produce of the secretion, or which clear the system of useless materials, in exchange for the hospitality which they receive. The services of these parasites are of different character, and the duties which they perform, are they not called for by medical men, who prescribe the employment of leeches, and consequently calling in the assistance of certain parasitic animals?

The human subject is an unwilling host of several species of animal parasites. In fact, every animal has his own parasite, which always come from without. With some few exceptions, they are introduced by means of food or drink. In order to study and ascertain their origin we must, there-

fore, study the food—that is, the prey or the plant—which furnishes the habitual nourishment of the host.

A carnivorous animal does not always content himself with a single kind of prey, but in the midst of his various kinds of food there is always some species which forms the staple of the usual bill of fare, or that which he gets which he does not bargain for. It is necessary to find out what this is if we wish to ascertain the parentage and the metamorphoses of the parasite, since it is that which conducts the parasite to its new destination. The mouse is destined to the cat, and the rabbit to the dog; in the same manner each one of the herbivora is intended to be the prey of a carnivorous animal, if not larger and stronger than itself, at least more cunning. In order to thoroughly know these sedentary or vagabond populations we must not only study them at the different periods of the year and under all the conditions of their irregular life, but it is necessary to follow them from the moment that they quit the egg till their complete evolution, closely noticing all that relates to their reproduction. There are some animals which are infected at every period of their life and at every season, others in far greater number only during a certain season and at their youth. There is no organ which is sheltered from the invasion of parasites, neither the brain, spinal cord, eye, ear, heart, blood, lungs, nerves, muscles, nor even bones. Each kind of worm has its favourite place, and if it has not the chance of getting there in order to undergo its changes, it will perish rather than emigrate to a situation which is not peculiar to it. Parasites present an extraordinary variety of forms and the difference between the sexes as well as in appearance are greater than in any other group of animals.

Worms may be divided into two kinds, segmented and unsegmented (*Platyhelminthes* and *Nemathelminthes*) castoda. In the unsegmented variety we have the most important. In the Platyhelminthes, or flat-worms, and sub-class castoda or endoparasitic worms we have several which in their adult form are met with in the alimentary canal of some vertebrate host (man).

These parasites have no mouth and no alimentary canal and they hold on to their host by means of hooks and suckers. They are hermaphrodites. As an example we shall take the *Tænia Saginata*, the unarmed or beef tape-worm.

Life-History.—This is an adult tapeworm in man which is widely distributed, and is about 15 to 20 feet in length. It is composed of a head, round, and four suckers on it, which is followed by hundreds of joints; these joints get larger and

also more mature, as they diverge from the head. These joints are simply receptacles for the eggs, and when ripe they break by the peculiar motion of the creature, and pass to the exterior in the fæces of the animal host (man) and get to the ground, and the eggs are scattered and swallowed by the grazing ox and pass to its alimentary canal where the cell of the egg is digested, and out comes a little six-hooked embryo; this stage is called the proscolex, this bores through the wall of the intestines and gets into the abdominal cavity, and thence gets through the walls of the blood-vessels into the blood stream and travels in the blood, until it gets a suitable habitat, that is between the fibres of a muscle of the ox, and now a cyst is formed, and it invaginates itself, a part of its wall is pushed downwards, thus: six-hooked embryo, cyst, invaginates, head and neck becomes reverted. This stage is called the cystecercus or bladder-worm stage, and in order that it may perform its round of life, the beef in which it dwells must be eaten by a vertebrate animal, and that is man or woman; this kind of beef is called measly beef and when the beef is eaten this stage of the tænia is swallowed, and in the intestines the cyst or bladder is digested, and the scolex anchors itself (not by its hooks, because they are absent in the worm), to the bowels, it soaks nourishment, and developes into the above-named adult worm. There is one thing that is very striking, that every parasite revenges the enemy of its host; it is perfectly natural, for instance, the man eats the ox where the cystecercus bovis is enjoying itself, and the result is that the cystecercus revenges on the man by developing into the "Tænia Saginata" in his bowels, and so does that of the sheep with the dog, and that of the rat and mouse with the cat, etc.

Tænia Solium (the pork tape-worm).

The measles of the pig was known to the ancients before the Christian era. And in the reign of Louis XIV. we read that public functionaries were appointed in France to inspect pigs, with a view of detecting the disease during life. With this object the pig's tongue was pulled out of the mouth and examined, both by touch and inspection, particularly on its under surface, for the little projections caused by the bladder-worm.

This method of inspection is still practiced at the markets in France, but it is quite unreliable as a means of safeguarding the "public health," because in a considerable

proportion of cases of "measles" there is no parasite on the tongue.

Well, now about its chief characteristics:—It is an armed form, has 800 or so segments, and from 26 to 28 anchoric hooks. It has the same life-history as the tænia saginata, but that its cystecercus stage is the cystecercus cellulosæ in the muscles of the pig.

The flesh of the pig which contains this parasite is called "measly pork." There are more than one of these tænia found in man. There is a case on record, says Professor McDougal, where a man voided 28 at a time. It seems that this unfortunate mortal was a sweetheart of a butcher's daughter, and had been there having a supper of "measly pork." The use of raw pork will produce tænia more readily than raw beef. Dr. Mesbach has given the following instance in support of this fact:—

At Dresden a father and his children regularly ate at their second breakfast raw beef; but one day they took pork instead, and eight days afterwards one of the children, when in a bath, voided two yards and a half of tænia solium. These vesicles in pork come from the eggs which tænia have scattered in its passage, and if the pig comes by chance in contact with the fæcal matter of a person infected by one of these worms, it is soon infested and becomes measled. In this fæcal matter there are either free eggs, which have been evacuated by the worm, or proglottides or joints. A fragment of the mature tænia, thus filled with eggs, when introduced into the stomach of a pig, is rapidly digested by the action of the gastric juice, and then you have the embryo above named. The egg or proglottides may be swallowed by man instead of pig. It is hatched in the stomach precisely the same, and the embryo takes its lodging in some closed cavity. Some have been found in the sella turcica of the brain, eyeball, and in muscles.

Prevention:—If we wish to prevent this infection we must not permit the animal to eat man's excrements nor to drink water in which substances that have become decomposed on a dung-heap have been allowed to remain. Again, if the pork be well-cooked there is no danger of infection, because the cystecerci scarcely survive the temperature of 120° Fahr.

These parasites are found mostly in the shoulder muscles, breast, diaphragm, and legs of man.

(*To be continued.*)

RINDERPEST IN SOUTH AFRICA.

PROFESSOR KOCH, accompanied by an assistant bacteriologist, has departed for the Cape of Good Hope for the purpose of discovering the cause and suggesting a method for the suppression of Rinderpest. May success attend their efforts, for hitherto neither preventive nor curative methods have been discovered. Inoculation was practised by Dobson in England in 1744, in France a year later; it then extended to other countries. It was also practised in this country during 1865—6. Vaccination with the vaccine lymph, as used for the prevention of small-pox in man, was also extensively performed, to the monetary advantage of the operators, but of no advantage to the cattle or their owners.

Extensive establishments have been built on the Continent for inoculation purposes, but these are now abandoned, the supposed prevention being in many instances as fatal and as infectious as the disease. Let us hope, however, that Koch will discover some method whereby the virus may be sufficiently attenuated as to induce a mild non-fatal form of the fever.

Various observers have stated that they have discovered organisms which they consider the cause of the disease. Semner describes a streptococcus liquefying gelatine: Metchnikoff, a short bacillus with rounded ends, found in the intestinal ulcers and in the blood: Laweljeff, spore-bearing bacilli, which in cultures are transformed into isolated micrococci or arranged in chains, and he states that inoculation with these cultures induced rinderpest. Dr. Lionel Beale described a granular matter, which he considered to be living particles—germinal matter. He also thought that they constituted the morbid poison. But up to the present time there is no unanimity amongst observers as to what kind of microbe is the pathogenic one: we must, however, conclude that the disease is of microbic origin, and, as in some other diseases, that an antitoxin or antiptomaine may be discovered. Let us hope that Koch will succeed in making this discovery, and thus gain the further admiration of the scientific world.

So grave are the conditions in South Africa that Mr. Francis R. Thompson, late Special Rinderpest Commissioner, states that the disease will not disappear until it reaches the dock gates of Cape Town, and that not one per cent. of the cattle in Cape Colony can be saved, and that we shall have to face one of the biggest wars Africa has ever experienced and that instead of slaughtering the cattle—a proceeding to

which the natives strongly object—the disease should be allowed to take its course. He says: "To stop its course now is a matter of impossibility. Killing cattle and compensating is pursued with the colonial natives in the North. My long experience of South Africa and its natives leads me to the conviction that we shall have to face one of the biggest wars Africa has ever experienced. It will be found that the Zulus, Griquas, and Basutos will join hands, and as it is a well-known fact that we could not beat the Basutos, what could be done in the case of such a combination as I have indicated?

Let the Plague take its Course.

"The Rinderpest" (continued Mr. Thompson) "is now in the old Cape Colony, at Bethulie, and all over the Free State. Natal is at present unaffected, but at Herschell, the great native centre, which bounds, its presence may be expected at any hour. Then comes the question, What is to be done? The Herschell natives are of a very different stamp to the Bechuanas. If they refused to have their cattle killed, we should have before us the danger of fighting 50,000 of the best and most warlike natives in Africa. My last advice to the Government was that they should save their money, let the pest run its course, and when all is over compensate deserving people. The disease has such a hold that there is only one solution, and that is, if it affects the native districts it must be allowed to run its course, and the policy of shooting native cattle must be abandoned. The authorities so far realise this that it is agreed that if the Rinderpest becomes general south of the Orange River the Government will give up a idea of destroying the herds.

Altering the Conditions of Life.

"The Rinderpest will alter the whole conditions of life in South Africa. It will affect politics, inasmuch as it will remove from the arena the farming element—people who own small farms with 50 head of cattle. These people will have to come into the towns and work at trades. It will kill, too, the best farming class we have. Men who, like myself, have imported cattle, will never attempt farming again. Only this week I received a cable announcing that every beast on my ranch had been killed. In many cases blood stock is being sold at slaughter prices. Wool, too, has been prohibited from coming into the old colony for fear of bringing infection. This is a serious business, as a certain proportion of the northern farmers farm with sheep, and

their trade is crippled, no merchants buying wool. Seeing all this the merchants of Cape Town are having weekly shiploads of Argentine mules to take the place of oxen employed in ploughing. This year no ploughing will be done in the northern districts. I feel sure that the Government will, in its wisdom, remove the duty on bread and meat, never, I trust, to be again imposed. Some idea of the enormous expense involved in fighting the Rinderpest may be gathered from the fact that it has cost as much as £500 in Martini cartridges alone to destroy a herd of 5,700 cattle. These cartridges cost 22s. 6d. a hundred, and in the case of wild beasts ten or twelve bullets are often required. This herd of cattle took two months to bury at a further cost of half-a-crown a head, every animal requiring to be buried six feet below the surface. This is only one incident in thousands that occur."

The gravity of the situation is undoubtedly very great. Let us hope, however, that it is not quite so bad as described by Mr. Thompson.

Mr. Hutcheon, Principal Veterinary Surgeon to the Colony, and President of the Rinderpest Commission, in a long letter published in the *Cape Agricultural Journal*, 1st October, 1896, expresses a belief that if cattle owners would report outbreaks of disease without loss of time, that if early movement of cattle were stopped within the suspected areas, and early slaughter of all diseased and in-contact cattle carri›d out, the plague could, as in other countries, be eventually suppressed.

ANTHRAX IN SWINE.

BY W. R. DAVIS, NEW VETERINARY COLLEGE.

ON Monday, October 26th last, we were sent for to inspect the carcase of a cow at the Edinburgh slaughter-houses. It was reported by the Inspector there, as being the subject of anthrax. The carcase showed peritoneal and pleural hæmorrhages, the flesh was flabby, the blood dark and fluid. Although engorged, the spleen was not greatly enlarged. A cover-glass preparation from it contained what to all appearance were anthrax bacilli in great numbers. I at once proceeded to the farm from which the beast had been sent, and elicited the following facts. The cow had been ill for ten days and had been attended by a veterinary surgeon, who found her suffering from and had treated her for pneumonia (there was evidence of adhesions on the ribs) and up to the day of her death she ap-

peared to be going on fairly well. She had been bled either just before orjust after death, and the blood had been thrown on the manure heap. The farmer scoffed at the idea of the case being one of anthrax, and the course of the disease was certainly enough to stagger one's belief in spite of the presence of the bacilli in the splenic pulp. I had brought a foot from the animal with me, intending to make a careful examination on my return, and in the meantime I had three pigs that were rooting about in the manure heap shut up by themselves and access to this place prevented. The usual means of disinfection were adopted. On making preparations from the foot on my return, there remained no doubt but that we were dealing with a case of anthrax.

Three days afterwards I received word that some pigs were bad, and on visiting the farm I found the three pigs that had been turned off the manure heap affected with anthrax. The animals, which consisted of a very fine black boar and two in-pig sows, exhibited the following symptoms:—The boar, which was very much more severely affected than the sows, stood stiffly, swaying backwards, something like a horse with laminitis; the mouth was wide open, the inspirations being accompanied by a roar that could be heard twenty yards from the pen; the extremities were cold; the temperature 103° F. The two sows were in a condition of stupor, and lay all the time; in them, too, the mouth was kept open, and there was a noise in inspiration, but not nearly so marked as in the case of the boar; the temperature of each was 107° F. No other symptoms were shown. I could detect no swelling about the throat, nor was there any œdema of the lips or eyelids. The difficult breathing was doubtless due to œdema of the larynx. The animals were slaughtered. No *post-mortem* was made, but cover-glass smears of the blood, stained by Gram's method, showed anthrax bacilli, though they did not appear to be present in great numbers.

I think that this outbreak is interesting on account of the previous illness of the cow tending to throw a doubt on the diagnosis of anthrax. It is, of course, highly improbable that the cow was affected with this disease all the time that she was ill, the probability being that she became infected during the course of an ordinary lung affection. The spread of the disease to the pigs, too, is worth recording, as it is often stated that these animals are immune to the disease.

A LONG FAST.

BY J. MATHEWS, M.R.C.V.S., BANGOR.

We know that dogs have often been subjected to long periods of starvation for experimental purposes, especially in connection with enquiries into the passage of fat from the blood into the cells of the tissues. Hoffman, for instance, starved a dog for thirty days, so that it lost 40 per cent. of its weight and became very lean. The dog was then fed for five days on a great quantity of fat bacon. In the dried liver nearly 40 per cent. of fat was found. But the accidental imprisonment of a dog and its starvation for nearly six weeks, and its ultimate recovery, is sufficiently remarkable to make its publication, I hope, not unacceptable to your readers. I have, therefore, sent the owner's statement of the incident:—

TAIRMEIBION, BANGOR, N.W.,
3rd November, 1896.

DEAR MR. MATHEWS,—My collie bitch, Beauty, was buried under straw (accidentally and unnoticed, and protected by projecting timber from wall of barn) and without food or drink from the 6th December, 1892, to the 13th January, 1893, viz., 38 days.

She was very fat when lost, and was nothing but skin and bone, and, of course, as nearly dead as possible when discovered.

She had been "lined" about a fortnight before burial, and I think it possible she may have pupped during incarceration, and ate the litter, if any.

There was very little excretion where she was found, and that hard and dry. Her eyes and nostrils were perfectly closed with matter.

I fed her at first with a little warm milk by means of a spoon inserted in her mouth. This would be about mid-day on the 13th January, and by the evening she was able to stand (with a little assistance) and lick the warm milk on her own account.

The excretion emitted for a few days afterwards was most offensive. In about a fortnight after discovery, she was as fat as ever, and is now alive and well.—I remain, yours very faithfully,

H. ELLIS.

MR. J. MATHEWS, *Veterinary Surgeon*,
Bangor.

MULTIPLE FRACTURE OF THE PELVIS.

BY MR. J. BRITTLEBANK, NEW VETERINARY COLLEGE.

On Tuesday, November 10th, called to see a bay carriage horse, nine years old, that had injured himself by falling in the stall. The animal had a habit of biting, partly in play, while having his head dressed, and the groom, standing on the off-side, gave the horse a slight tap with the back of his hand on the mouth. The horse jumped away, slipped on the

pavement, which was concrete, and fell against the trevis and on to the ground. After a good deal of struggling he managed to get up, when he stood on three legs and quickly began to sweat profusely. There was no deformity and no shortening of the limb. After awhile, although excessively lame, the horse put some weight on the injured member. It was, however, abnormally mobile, and crepitations could be detected in the neighbourhood of the coxofemoral articulation. Diagnosis: fractured pelvis into or in the neighbourhood of the joint. The case looked like a hopeless one, but, at the owner's request, the patient was floated to the college, and was put into slings, where it died the same day.

Post-mortem.—Death from internal hæmorrhage, due to rupture of the internal iliac artery and multiple fracture of the pelvis. The fracture looked as if the femur had been used as a ram to break the pelvic bones. One break went vertically through the acetabulum; the sciatic spine was broken off, and the oblique branch of the pubis was broken. Several portions of the bones forming the acetabulum were broken off and lay among the muscles, and one of these must have divided the artery.

This accident emphasises the dangers attendant on the use of concrete as a flooring for stables, especially after it is well worn, and points to the necessity of always having such floors sanded.

THE NATIONAL VETERINARY BENEVOLENT AND MUTUAL DEFENCE SOCIETY.

The above Society will hold its Annual meeting on Friday, the 11th day of December, at the Grand Hotel, Aytown Street, Manchester, 4 o'clock.—SAM. LOCKE, *Hon. Sec.*

THE Royal Commission on Tuberculosis held its first sitting for evidence on Wednesday, 18th November, at the office of the Board of Agriculture in Whitehall Place. The members present were: Sir Herbert Maxwell, Dr. Thorne, Professor Brown, Mr. Shirley Murphy, Mr. T. C. French, and Mr. John Spier. The terms of reference were: "To inquire and report what administrative procedures are available and would be desirable for controlling the danger to man through the use as food of the meat and milk of tuberculous animals; and what are the considerations which should govern the action of the responsible authorities in condemning, for the purpose of food supplies, animals' carcases, or meat, exhibiting any stage of tuberculosis."

BOARD OF AGRICULTURE.

Annual Reports of Proceedings under the Diseases of Animals Act, 1894, *the Markets and Fairs Acts, etc., for the year* 1895.

WE have received, by favour of the Board of Agriculture, the above Report for the year ending eleven months ago, and are able, in our last number for 1896, to give our readers little more than an outline of its contents. We think the delay in publishing this valuable report is very much to be regretted, as a good deal of its value depends, and must depend, on the freshness of its information. One naturally wishes to know before December what was the state of the country in regard to the prevalence of disease, and the size of flocks and herds in the year that ended when the present year, now so near its close, was still young. Farmers and breeders, land-owners and veterinary surgeons, merchants and statisticians, are all on the outlook for reliable information with the Government stamp, but through this undue delay it has lost all but a faint historic or scientific value, quite incommensurate with the great labour evidently bestowed by the compilers. We would respectfully urge the Head of the Department to use his best efforts in the direction of increased speed in the production of these reports. We know how ponderous a machine a Government Department is, and how difficult it is to goad its officers on to greater activity, but with a commander like Major Tennant, great things may be hoped for. The title of this little book is as ponderous as the Department. Might we venture to suggest a lightening of the labour by the substitution of a shorter title, say, "Report of the Veterinary Department?" The bulk of the work is taken up with work which comes within the scope of the veterinary surgeon's activity, and the name we have suggested would therefore be appropriate.

As is just, the book begins with eighteen pages of a report by the chief veterinary officer (Mr. A. C. Cope), on the diseases prevalent in this country during 1895. Great attention is paid to swine-fever, that subtle plague that so often baffles veterinary and sanitary authorities, and the text is illustrated by seven capitally executed coloured drawings, which must greatly aid the practitioner in his diagnosis. Mr. Cope informs us that in the year 1895 the number of swine slaughtered for this cause was 69,931 whilst 10,917 were reported to have died of the disease—a most appalling total. The principal losses took place in Somerset, Essex, Suffolk, Wilts, Stafford, Hants, and the West Riding of

Yorkshire. The losses in Scotland and Wales were small in comparison with the rest of the United Kingdom, their combined total amounting to under 5,000. Mr. Cope reports also on pleuro-pneumonia, anthrax, foot and mouth disease, glanders, rabies, and sheep-scab, and we refer our readers to these reports, for many important details.

Major Tennant follows with summaries on the imports of cattle and sheep into Great Britain from foreign countries and from Ireland, and adds many pertinent details and remarks on this important subject. His opinions, based on acquaintance with shipping arrangements between Ireland and England, are worth the attention of our readers, so are also his statements and theories regarding swine-fever and rabies; although sometimes inclined to be a little diffuse, they contain a great deal of common-sense which will appeal to the general public. Two maps are introduced showing the comparative prevalence of swine-fever and rabies in this country, and these are well worth the most careful study.

The second part of the book is taken up with a series of Statistical Tables, prepared with minute care and giving extraordinary fulness of detail. Perhaps the compilation of these tables may have caused the great delay in the publication of the Report, but here, again, a powerful Department ought surely to be able to command sufficient clerical labour to compile and digest any amount of statistics in a very short time. Table I. gives us the number of cattle, sheep, and swine in Great Britain in the month of June in 1891, 1892, 1893, 1894, and 1895, and from this we learn that we possessed last June 6,354,336 cattle of all ages, 25,792,195 sheep, and 2,884,431 swine. This is exclusive of Ireland. Tables II. and III. show the animals as distributed over the various counties. Tables IV., V., and VI. show the imports of cattle, sheep, and swine from Ireland, and Tables VII., VIII., and IX. show the imports from foreign countries. The most noticeable fact in this connection is the enormous increase last year in the importation of cattle and sheep from Argentina. The figures are as follow:—

	Cattle.	Sheep.
1894	9,546	73,442
1895	38,763	306,262

More cattle and sheep were landed at Liverpool in 1895 than at any other port in Great Britain, but the vast majority of Argentina cattle and sheep were landed at London. Tables X. to XXI. deal with disease amongst animals from 1887 to

1895, and show the topographical distribution. Tables XXII. and XXIII. give information as to animals imported from abroad which were affected with contagious disease from 1870 onwards. Here, again, Argentina stands out prominently—and with a bad prominence this time: in 1895 there were 81,267 sheep found to be affected with scab on arrival, as against 1,511 from the U.S.A. (the next highest country). The figures for 1894 were Argentina 9,143 and U.S.A. 6,619, so that whilst scab was rapidly decreasing in 1895 in North America, it was much more rapidly increasing in South America.

The last portion of the Report gives tables of international trade in animals, compiled from the official trade statistics of the various countries. The figures represent the imports of cattle, sheep, and swine into each country, giving the place of origin; likewise the exports from these countries, with the names of the countries to which the animals were exported. The tables embrace Argentina, Austria-Hungary, Belgium, Canada, Denmark, France, Germany, Italy, Holland, Norway, Portugal, Russia, Spain, Sweden, and the United States.

When we state that the modest price of this little book is only 1s. 3d., we are surely warranted in saying that it ought to be on every surgery table as well as in every gentleman's library.

CATTLE DISEASE IN JAMAICA.

REPORT BY PRINCIPAL W. WILLIAMS, NEW VETERINARY COLLEGE, EDINBURGH.

(*Continued from page* 322.)

Colonial Secretary's Office,
26th September, 1896.

THE Major-General administering the Government directs the publication, for general information, of the following report by Professor W. Williams, F.R.S.E., F.R.C.V.S., etc., on Cattle Disease in Jamaica.

By command,
FRED. EVANS, *Colonial Secretary.*
KINGSTON, September 23rd, 1896.

To the Honourable the Colonial Secretary:

QUARANTINE.—Being now satisfied that the wasting disease arises from the invasion of ticks and also that so long as they are allowed to be introduced from without, all internal endeavours to destroy them will be futile unless their introduction from without be prevented, I have therefore to recommend

that the following Quarantine Regulations be enforced upon all cattle imported into the Island from tick-infested countries such as the United States of America; Central and South America; The Leeward Islands; South Africa; Australia and all other parts of the world where ticks are known to abound, and that until these regulations can be strictly enforced, there should be a total prohibition of cattle importation.

In order to make myself acquainted with the present system of quarantine I visited the Quarantine Ground situated at Rock Fort, about 300 yards from the wharf at which the cattle are landed from the vessels.

After landing on, and leaving the wharf the cattle pass along the Main Road from the wharf to the Pens.

There are three large pens, separated one from the other by a roadway 18 feet wide and fenced by wire fences strengthened by two wooden rails.

Each of the large pens is provided with a water trough; kept supplied by a pump worked by a wind-mill; the supply of water is sufficient in quantity and seemingly good in quality.

Each large pen is also supplied with a smaller "picking pen," which in turn is sub-divided into two compartments.

This picking pen is for the convenience of purchasers, who there select and brand the cattle they buy.

The pens are provided with good strong gates, and it was stated that the Constabulary hold the keys of these gates which can only be opened by the Constable in charge of the station or one of his men.

No two lots of cattle are supposed to mix in one pen. The 18 foot roadway being the means of separation. There appears however to be nothing to prevent a new lot of cattle first landed from passing up any of these roadways on their way to their pen, nor to prevent a lot of cattle which have been granted pratique, immediately passing down the same way.

The wire fences by which the pens are enclosed are perfectly useless for quarantine purposes, as the ticks, the source of danger, can pass freely from one pen to another.

The posts and wires also form a convenient harbour for the ticks which are there readily picked up by the cattle when rubbing up against a post, &c.

As far as I could gather, the pens have only been cleaned once in five years. The refuse grass, &c., consequently form a further cover for the ticks, and in wet weather hold the water and form a deep, muddy matter, which of course becomes daily worse as the cattle trample it.

To make the quarantine effective, the pens should be enclosed separately by means of mason work, or closely-boarded walls, 5 feet 6 inches high, constructed so that there be no harbour for ticks between the boards or stones.

Each large pen, provided with its picking pen, should be entirely separate from the other large pens.

The pens should be hard-bottomed, and all droppings and waste grasses daily cleaned up and burnt, the pens being kept perfectly clean.

The walls should be regularly whitewashed or tarred so as to destroy all vermin that may be hiding in them.

A "dip" constructed on the Australian or American plan should be provided, and the cattle dipped therein regularly every 10 days during their stay in quarantine; the period of quarantine to be three (3) months.

Each animal to be separately inspected, careful search being made by turning up the hair for ticks on the skin, and no animal should be granted *pratique* till the Veterinary Inspector is thoroughly satisfied by careful examination that it is perfectly free from ticks and from any contagious disease.

Summary.

(*a*) That the disease as witnessed by me is a chronic form of Texan fever conveyed from place to place and transmitted from one animal to another through the intervention of the tick.

(*b*) The infection is conveyed by the progeny of ticks which have matured on infected cattle and is inoculated by them directly into the blood of susceptible cattle.

(*c*) It is stated that two mild attacks or one severe one will probably prevent a subsequent fatal attack.

(*d*) That animals under one year old, though not immune, are not so frequently attacked by the slower form of the disease, and that if such be nursed over one or more mild attacks, they may probably obtain immunity. Ticks being the cause of the disease there should

(1) be a united effort to destroy them on the cattle by external dressings; and on the ground and pastures by burning.

"Dipping Ponds" as now used in America and Australia, should, where possible, be preferred to the applications by hand. Plans of the most recent and most effective ponds or baths should be obtained.

(2) To prevent the further introduction of ticks into the country by an effective system of quarantine.

(3) After destroying the ticks on the cattle the "animal strength" should be maintained by keeping them in a quiet sheltered place and feeding well, without causing them to travel for their food.

(4) To avoid drastic medicines. If the cattle drink pond water, it will be safe to conclude that the disease may be complicated and aggravated by the *Strongylus contortus* in the fourth stomach; for the destruction of which, a dose of sulphate of copper should be administered, and, if necessary, repeated 2 or 3 times; but when cattle obtain their water out of running streams, or from clean tanks the copper is not necessary. If the animal be feeble, the following may be administered to act as a tonic and as a food, viz.:—Sulphate of iron, nitrate of potash and common salt (chloride of sodium) of each one drachm in a pint of pimento tea, once a day for a week or so.

In conclusion, I have great pleasure in informing your Excellency that I have received great assistance in conducting this investigation from Mr. Adam Roxburgh, indeed had it not been for him I should have encountered many difficulties. I have also to thank Mr. Geo. Douet, Secretary for the Jamaica Agricultural Society, and many cattle owners, not only for their information and desire to assist me, but for their kindness and hospitality. My son, Dr. Williams, has been of great assistance to me in many ways.

I have the honour to remain, etc.,

W. WILLIAMS, F.R.S.E., F.R.C.V.S., &c., Professor,

Principal of the New Veterinary College, Edinburgh.

APPENDIX I.

Report on the Morbid Anatomy and Microscopic appearance of the Wasting Disease.

BY T. A. WILLIAMS, M.B., C.M.

As Principal Williams, owing to his constant travel about Jamaica inspecting and examining healthy and diseased herds, has not himself had time for microscopic and bacteriological examination of the specimens we took from

live and dead cattle, this duty devolved upon me. The following is a summary of my observations.

As the enumeration in his report of the many affections to be considered shews, our attention was prominently directed towards the microscopic characters of the blood:

A. In the first place, great anæmia was almost always present. The difficulties in making exact observations with the hæmatocytometer in open pens were considerable; and as we had also to make other blood and visceral preparations, which to be of any value must be done with rapidity, the red corpuscles of the blood were enumerated in only a few instances. The smallest number found was 700,000 per cubic milliimetre. This number indicates a most profound anæmia, being more than 7 times less than the normal number.

The hœmoglobin of the blood was also found greatly diminished, but as far as my limited observations went, not to so great an extent as the number of red cells.

B. The features of the red cells were greatly altered in the more grave cases characteristic of changes in all pernicious anæmias. Their measurement (normally 7·5 micro.) varied from 3 to 9, 10 or even 12 micro. Their shape instead of being perfectly discoid was in many instances irregular with prolongations in all directions. They were often curved on themselves, and were sometimes without pigment. In some I observed a central area about 4 micro. in diameter, which did not stain with basic or acid aniline dyes, surrounded by a more transparent zone about 2 micro. wide staining faintly with basic aniline dyes but becoming decolourised by a weak solution of acetic acid.

C. The white corpuscles did not appear to be essentially modified and no detailed study of them was made.

D. The blood also contained in several cases one or more of the following abnormal bodies:—

(1) In the first acute case observed, that seen in Trelawny, I found a few bodies shaped like a short banana averaging 4·6 micro. long and about 2 micro. broad, very highly refractile and not staining deeply with basic aniline dyes. They were seen only in the red cells, not free in the plasma.

(2.) Numerous irregularly rounded bodies about 1·5 micro. in diam., within, generally near the margin of and between the red cells. They were much more numerous in the blood exuding from the cut organs especially the liver, spleen and above all the kidney. They stained more deeply than the former by Loeffler's method, but were decolourised completely by Gram's method.

(3.) Faint bodies, in some foci of a pale brick-red tinge, never observed within but only between the cells.

I do not deem it advisable to enter into the question of whether these bodies are really plasmodia of foreign origin as considered by some, or are merely embryonic or degenerative forms, or pathological modifications of the normal red or white cells or blood-plates.

The purposes of our enquiry are sufficiently served by the fact that the bodies I have observed are identical in essential respects with some of the forms described as being found in the blood by those who have studied that fluid in the disease known as Texas Fever.

Any slight differences which may exist between what I and others have seen are only to be expected in view of the modifications which the disease must necessarily exhibit under such various conditions

in different countries. The study of this condition is yet in its infancy, and one has only to think of the very striking homology between this disease and malarial fever in man to realise how many differences must necessarily be found in so many forms of the same disease.

The minute examination of organs not apparently abnormal to the naked eye shows the following :—

(1) The liver :—

(*a*) The liver cells were, in some cases, the more acute in a state of cloudy swelling, their nuclei being almost all obscured. A fatty degeneration of the cells, was presented in the more chronic cases, and in many a slight amount of abnormal pigment appeared within the cells.

(*b*) The bile capillaries in two cases were full of a dark yellow pigment, appearing as beautiful radii from the central vein of the hepatic lobule.

(*c*) The blood capillaries were visible only here and there, and did not present any abnormality either in their walls or contents. I have not yet observed any abnormal contents in the capillary blood of the organs.

(2) The chief abnormality in the spleen was the presence of an unusual number of masses of granular sienna-coloured pigment within the large cells of the splenic pulp and the endothelioid cells of the stroma. Also a large number of minute isolated granules of similar appearance extend throughout the spleen substance. This is probably broken-down blood pigment, and is an invariable accompaniment of any disease in which such extensive destruction of red blood-cells takes place as in this. The amount of pigment varies with the rapidity of destruction of blood-cells, and if very great (which only occurs in very acute cases) it is excreted by the kidney, giving rise to the appearance of the urine which produces the striking symptom of red water. In no instance have we observed such a degree of blood change. In none of the cases has there been even sufficient to cause the thickness of bile which is one of the characteristic changes in the severe forms of this disease.

(3) The kidneys shewed extensive cloudy swelling in their cells, their outlines being quite indistinct, while in a case which had been ailing for weeks the cells appeared quite normal.

(4) The other organs present, with the exception of anæmia, no morbid pathological change.

Other diseased conditions were met with having no relation to Texan Fever.

I. Large lumps in the neck. These when opened were found to be chronic, very thick walled abscesses containing a thin sero-purulent fluid. Cover glass preparations of the fluid and scrapings from their walls exhibited many micrococci both in bunches and chains and also arranged irregularly throughout the field of the microscope. They were found to stain by Gram's method; and one agar-gelatine exhibited the characteristic growth of the stettococcus pyogenes and the staphylococcus pyogenes aureus.

II. Anthrax.

III. Fluke.

IV. Strongylosis of lungs and stomach in a more acute case are considered in Principal Williams' Report.

APPENDIX II.

FLUKE DISEASE (LIVER ROT).—The Fluke. *Distoma Hepaticum.*—A flat, brown coloured parasite found in the liver, rarely in other organs and like most parasites, find the most favourable soil in young rather than old animals. Lambs, and a year or two year old sheep paying a heavier tribute to it than adults; and in several of the epizooties affecting the bovine species calves were first attacked, cattle, two or two and a half years old, dying in a greater proportion than those of a more advanced age.

A study of these epizooties shows that they always follow abundant and prolonged rains, the influence of humidity constantly holding a predominant position in their etiology.

Trematodes, with rare exceptions are hermaphrodites. The Distomian Trematodes are oviparous, their development being related to their metamorphoses and migrations. In the uterus the ova undergo segmentation and not unfrequently the embryo is even formed there. When they are laid or have arrived in a moist medium such as morasses and other damp or wet soils, they continue development, and there issue from them, at the end of a certain time, embryos, which are sometimes nude, sometimes ciliated (infusorium embryos). After a sojourn, more or less prolonged, in water, these embryos have to enter the body of an aquatic creature—usually a mollusc—and there they lose their cilia, and are transformed into a more or less complex organism—a kind of sac generally furnished with a sucker (the germinative or circariguous sac), which may be destitute of mouth and digestive tube (sporocyst), or may possess one or the other of these (redia). These germinative sacs engender others, by fission or budding. They represent the second phase of external development.

Each sporocyst, or redia, produces new organisms in its interior, named cercaria, which in their organization resemble the adult of distomian; they have suckers like them, but they differ from them in having no genital organs, and in the presence—at the posterior end of their oval bodies—of a very simple bifid tail.

After a certain time they escape from the germinative sac, leave the body of their host, swim or crawl in the water, waiting for the advent of another aquatic animal—mollusc, worm, larva of an insect, more rarely a fish or frog. Arrived in their new abode—*i.e.*, the body of their new host—they lose their caudal or tail-like appendage and become encysted. They now await the chance that will carry them into the stomach of the third host, after being nourished by the second. The latter is digested, the cyst dissolved, and the parasite, being free, reaches the organ which is to be its definite abode—intestines, biliary canals, urinary bladder, respiratory apparatus, sub-osbital sinus of birds, etc. There the nematode (fluke), acquiring its genital organs, attains its adult state. Such is a general description of the evolution of Distomians. Variations will be seen, according to species, media in which development occurs, as well as climatic conditions, and from this may be gathered that they cannot subsist for any length of time except in wet or damp places, and for their destruction the following has been recommended.

Drain wet pastures, or if this cannot be accomplished dress them with salt or lime. The latter in solution—·75 per cent. will destroy embryos of the flukes as well as their hosts—mollusc—with regard to salt, it has been found that a two per cent. solution of common salt killed the cercariœ or young flukes in less than five minutes and in a one per cent. solution they rolled themselves at the end of two to seven minutes, and perished after 20 to 35 minutes but in ·25 per cent. solutions they were still alive after more than 20 hours.

From the foregoing it will be gathered that salt has a powerful effect in preventing fluke disease—which never appears on salt marshes no matter

how wet they be. The period when salt or lime or a combination of both should be applied to the land should be during the rainy seasons or when the embryos abound. Salt should also be given to the cattle—Perroncito, an Italian veterinarian, who has studied the fluke disease—recommends that the salt be put into the drinking water; ·50 per cent. does not render the water undrinkable. If in addition to salt the animals can have subsidiary feeding such as grain—the protection against fluke will be more complete.

Lung Worms.

In some few instances the wasting disease was complicated with worms, strongylus micrurus in the bronchial tubes of the lungs, but never in sufficient numbers to do much harm there being no symptoms of their presence during life; however they may by increasing in numbers, become a source of danger particularly to young animals such as calves and young sheep.

In the sheep a variety of thread-like worms are found in the lungs sometimes causing great mortality, and in cattle, particularly young cattle, similar parasites are also found in the air passages: they belong to the genus strongyle, which are long filiform worms tapering towards their extremities, and cause the following symptoms both in cattle and sheep—young or old as the case may be:—

At first the symptoms are slight, marked only perhaps by a short cough, husk or hoose—but as the air passages become further invaded the cough becomes frequent and convulsive, coming on in fits, particularly if the animal be hurriedly moved. There is a discharge more or less profuse from the nose, and masses of mucus are expelled during the act of coughing, which, if examined, will be found to contain numerous worms, the animal loses its appetite, and condition becomes thin and bloodless, and death occurs from exhaustion in a few weeks—2 or 3 to as many months. The only successful method of combatting the inroad of these worms is to destroy them in the lungs by the intratracheal injection of chloroform, iodine, &c., and in order to perform this operation safely, a Veterinary Surgeon should be employed.

MR. J. MACLACHLAN YOUNG, M.R.C.V.S., Dundee, a graduate from the New Veterinary College, has been appointed Lecturer on Veterinary Hygiene at Aberdeen University. This is the first appointment of a veterinary surgeon as a teacher in any university in Great Britain, and Mr. Young has our heartiest congratulations and best wishes.

Cases.

A PECULIAR CASE OF LARYNGITIS ENDING IN ALMOST COMPLETE OCCLUSION.

BY WM. A. PALLIN, M.R.C.V.S., ASSISTANT TO CHARLES ALLEN, F.R.C.V.S., DUBLIN.

Subject.—A bay gelding, 7 years old, the property of the Dublin United Tramways Company.

History.—Bought by the above Company on the 30th March, 1896; sound when purchased, but not examined for wind; went to work immediately, and proved a very good

horse; showed no signs of roaring or any difficulty in breathing. In about three weeks he contracted the usual catarrh which most of the horses get when newly bought. This necessitated his being placed on the sick list for about a fortnight, when work was resumed. He went on well for about three or four days at light work, and about the fifth day the driver brought the horse in (roaring in his walk), and reported he had taken to roar on his return journey, and that it was with difficulty that he managed to complete the journey home. The horse was put in the stable, the roaring ceased, and he appeared all right. The following day I visited the depôt, and found the horse in apparent health while at rest, but when trotted he immediately showed a difficulty in breathing and commenced to roar. In fact, if the animal was asked to move anyway fast, the symptoms of asphyxia presented themselves. On closer examination there was no sign of any abscess forming or anything that would account for such difficulty of breathing. On manipulation of the larynx there was no sign of any swelling or even tenderness on pressure as one might have expected under the circumstances. However, suspecting he was breeding strangles, I ordered his throat to be well rubbed with ammonia liniment, and I saw him frequently, as also did Mr. Allen. He continued much the same for about a month, except that at times he seemed a little worse and gradually his breathing became somewhat difficult, even in the stable, and the symptoms of strangles became quite apparent by large tense swellings in the parotid region. I then had him again severely blistered with liniment, but the abscess showed no sign of breaking externally, and appeared to be in the guttural pouches, and to be mechanically interfering with respiration, as by now the animal showed great difficulty in breathing, and asphyxia being threatened, tracheotomy had to be resorted to by inserting a temporary tube in the ordinary manner; this was about the 25th June. The respirations now became quite easy and normal through the tube; meanwhile the swellings remained, showing no sign of breaking, and, being very deep-seated, neither the lance nor trocar and canula were thought advisable. I now blistered the swelling again, this time very severely, with biniod. ointment, without any external effect. However, in a few days a thick purulent discharge appeared from one nostril, and shortly afterwards from the other. Meanwhile the swellings slowly subsided and gradually all disappeared in about three weeks. All this time the tube had to be kept

in ; it was taken out regularly every day, the wound dressed, the tube well cleaned and returned. It was found necessary to keep the tube in, as the roaring was renewed if the tube was left out for any length of time, or if it was corked up for a few minutes. The animal went on improving in health and put on condition, but even with a clean tube he used to get periodical attacks of nervous excitement, and the respirations became much the same as if the tube was out or had been plugged.

We kept the animal on for months without any apparent change, except that now and again a quantity of discharge came down the nostrils. Thinking that something was radically wrong I had him cast, chloroformed, and thoroughly examined the pharynx for tumour, or anything that might account for the described symptoms, but nothing could be found. On examining the larynx, the rima glottis was distinctly contracted, the mucous membrane on the arytenoids and epiglottis being greatly hypertrophied. Further digital examination indicated the vocal chords to be firmly fixed almost in apposition, which at the time I described as a spasm or stenosis.

Having come to the conclusion that nothing in the form of an operation would be of any success, I advised the animal to be destroyed. On the following day (October 10th) he was sent to the knacker's, and I made a very careful *post-mortem* examination of the respiratory organs chiefly.

Post-mortem Examination.—After making a careful examination of all the nasal passages, fauces, pharynx, and guttural pouches, I found that they were all perfectly healthy, there being no sign of a tumour or stoppage of any kind. The numerous glands in the folds of mucous membrane between the base of the tongue and the epiglottis were enlarged with very prominent mouths and the mucous membrane itself was hypertrophied. We now come to the larynx which I think was most remarkable. On removing the larynx and portion of the trachea, the former was noticed to be entirely rigid and altogether very exceptional. The intrinsic muscles (except the crico-thyroid) had undergone considerable fatty and fibroid degeneration, and the left crico-thyroid itself was slightly altered. The larynx with its muscles, etc., was covered with dense fibrous tissue, which had produced fixation of the joints between the cartilages. The rima glottis was drawn sideways. Owing to the inflammation being on the left side, all the muscles on that side were greatly wasted. The left arytenoid cartilage was

drawn inward and downward, which, together with the great fibroid thickening of the mucous membrane on the epiglottis and lips of the arytenoids had greatly diminished the opening. The vocal chords as diagnosed *ante-mortem* were fixed almost in complete apposition and all the mucous membrane inside more or less inflamed. On further dissection it was found that the left arytenoid cartilage and the left side of the cricoid cartilage were undergoing ossification. A sinus, which to me appeared to have commenced in the depression above and between the arytenoid cartilages, where there was much staining and congestion. The sinus would appear to have burrowed downward to the left in the substance of the left arytenoid cartilage, under the wing of the thyroid cartilage, and into the substance of the cricoid cartilage, in which canals had formed in every direction. As a result of the chronic inflammation, ossification had set in at different points, and formed islands of fully developed osseous tissue, involving the outside of the left side of the cricoid and left arytenoid cartilages. The sinus appeared to finally terminate just in front of the left vocal chord on the mucous membrane, as a kind of papillæ. The cartilages mentioned, being partially ossified, and the whole larynx firmly bound down with dense fibrous tissue, needless to say, allowed of no dilation whatever. In my opinion an abscess had formed, superior to the larynx, burrowed downwards in the direction of the canal already mentioned, and finally discharged itself on the mucous membrane at the papillæ. Meanwhile the chronic inflammation had set up, and would account for the large quantity of fibrous tissue formed, which, retracting, had caused stenosis, and ossification had set in. The muscles had atrophied and become fatty or fibroid from want of work, and impaired nerve and blood supply.

There is nothing particular to mention of the remaining organs, except that there was stricture of the trachea at the seat of operation. This, I think, was a very interesting and rather uncommon case as a sequel, no doubt to strangles. The literature regarding such cases being scanty, I have thought it would be of some interest to the profession.

SUPPOSED CASES OF VEGETABLE POISONING IN COLTS, IN WHICH VOMITION WAS THE CHARACTERISTIC SYMPTOM.

BY MESSRS. LOTHIAN, M.R.C.V.S., DUNS, AND CONNOCHIE, JUNR., M.R.C.V.S., AYTON.

THE following cases all occurred within a day or so of each other, at different farms, but all in the middle of Berwckshire, and immediately after a severe storm of wind and rain.

Case I.

A chestnut two-year-old hackney filly was observed ill at mid-day on September 25th.

Symptoms.—Colicky pains, sitting on her haunches, and vomiting at intervals of from five to ten minutes considerable quantities of fluid and also a little solid ingesta. On looking up the nostrils the ingesta could be seen lying, and were capable of being removed by the finger. Each act of vomition was accompanied by a spasmodic contraction of the muscles of the neck, the head was depressed, the animal gave a sort of shriek, and fluid poured from the nostrils.

Treatment.—As the animal was running at grass she was brought home, dried and clothed. Some chlorodyne was administered in a little lukewarm water but part of it was soon expelled. However, in a few hours the vomiting ceased, and a little gruel was given. This was not returned, and next morning the animal was nearly into her usual again. She made a rapid recovery.

Case II.

Also a hackney colt observed ill in the field on September 26th.

Symptoms—Colicky pains, more pronounced than in former case, also sitting on haunches and vomiting. The fluid expelled was more abundant than that of the last case, of a sort of coffee colour and had an acrid offensive smell. As near as could be guessed, eight fluid ounces escaped from the nostrils at each act of vomition. Pulse about 50, strong and wiry, temperature 104½ and visible mucous membranes considerably injected.

Treatment.—This, as in the former case, consisted of attending to the comfort of the animal generally and an occasional hypodermic injection of morphia and atropine when the pain seemed severe. It was thought perfectly futile to attempt

to give anything by the mouth. This colt got rapidly worse and died next morning.

Autopsy—The immediate cause of death was rupture of the stomach. The villous mucous membrane was coloured red, thickened and inflamed. The stomach must have been greatly distended before rupture took place, as the abdominal cavity contained a large quantity of fluid the same as had been expelled from the nostrils.

Case III.

A blood filly, noticed ill in field on the morning of September 27th. She was brought home showing exactly similar symptoms to the two former cases. The vomiting in this case was extraordinary. Without the slightest effort the fluid ran down both nostrils, and when an attempt at vomition was made, little short of a pint would be ejected at a time; in fact, the vomition was the most complete that could be imagined, and without exaggeration it was estimated that not less than two gallons would be ejected throughout the day. During a temporary lull of the symptoms during the day a little bismuth subnit. was given, but the animal died early the next morning. Owing to pressing engagements a *post-mortem* examination could not be made.

Case IV.

A three-year-old cart colt, observed ill in field on morning of October 4th. He had been seen the previous evening, and nothing amiss noticed about him then.

Symptoms.—From the time this colt was first seen ill he never lay down, but stood quite firm on his legs. He was slightly tympanitic, and had a dull and dejected look about him. Pulse about 70 and wiry, temperature 105. The respirations were hurried, the inspiratory act being rather shorter than the expiratory. The pupils were greatly dilated and visible mucous membranes much injected. Defecation and urination seemed suspended, and examination per rectum revealed that viscus greatly dilated and the bowels in a seemingly paralysed condition. He presented no symptoms of acute abdominal pain, he never even turned his head round to his flank; but from the dirty state he was in, and the manner in which his eyelids were bruised and swollen, it was concluded that he had had colicky pains at the outset of the attack. The ground was also marked where he was found, as if he had been pawing and rolling. In this case, as with

all the others, there was vomition, each act being generally accompanied by the characteristic shriek. The fluid ejected was more of a dirty green colour, with a very sour smell. No solid matter, or if any, very little, was expelled in this case.

Treatment.—The same as in the former cases, with this exception, that he got no anodyne or sedative medicine. He stood rather too quiet. As he evinced thirst, he got a mouthful of pure cold water, containing a little hyposulphite of soda, occasionally. He kept in much the same condition throughout the day, but towards night he seemed worse, his expression becoming more haggard, his breathing more hurried, and his pulse almost imperceptible. He stood until within a few minutes before death, and he vomited until the end, although not to the same extent as at first. He died at four o'clock in the morning, being, perhaps, about 26 hours ill altogether.

Post-mortem.—On opening the abdominal cavity, the first thing to attract attention was the enormously distended condition of the stomach. On making an incision into it, a large quantity of the same dirty green fluid, that had come down the nostrils, escaped, leaving some solid ingesta behind. This seemed to consist chiefly of grass undergoing digestion, but a number of seeds or pips were found, very similar in size and appearance to the so-called stones in haws. Patches of congestion were found on the lining membrane of the stomach and bowels. The cæcum was nearly empty, and contained no fluid at all. The large colon was very full of solid ingesta.

As yet it has not been clearly demonstrated what the seeds or pips really are.

With the exception of Case II., the others had companions grazing along with them. In each field there was a quantity of fallen foliage and fruit from the trees, which comprised chesnuts, limes, ash trees, and an oak or two. Very few acorns were to be seen lying about. The field in which Case IV. grazed, contained a large number of mushrooms which the colts partook greedily of, but as far as could be judged, they were real mushrooms and not poisonous fungi. It is to be hoped that the experiences of other practitioners will enable them to state what they think would be the chief cause of poisoning amongst those four colts. These cases are recorded also as adding a little to the literature on the subject of "Vomition in the Horse."

MALIGNANT DISEASE OF THE STOMACH IN A HORSE.

BY A. WATSON M.R.C.V.S., DUBLIN.

THE following case, I conceive, presents some unique points, both as to the symptoms during life and the *post-mortem* results. Hence these notes.

A bay gelding, aged about fifteen years, came for advice and treatment to me from Messrs. John Jameson and Son, the celebrated distillers, on the 18th September. The appearance of the horse was wretched; hair standing on end, wasting of the muscles over loins and quarters, and tucked-up belly. The driver said he was not feeding, and that he was easily tired, in fact so much so that after travelling two or three miles with a moderate load he would want to lie down. The temperature was normal, as was the pulse; bowels constipated; urine, as well as could be ascertained, was normal. Upon examination of the mouth, I found the back molars required attention, and I rasped them, sent him home, ordered bran mashes and a dose of linseed oil. After a week he came back, and certainly looked nothing better; the bowels still remained tardy. I now ordered him an 8-dram aloetic purge, which made no appreciable change, although he was exercised. After four days I ordered more linseed oil and enemata, but although they were given three times daily, the results could not be considered satisfactory. Appetite still bad, and coat staring and hide bound, although he was now getting roots and grass.

Having seen good results from tinct. nux vomica and belladonna for constipation in the human subject, I determined to try it, and found whilst I continued its use the appetite was materially improved and bowels stimulated, but the condition not improving, I next tried alcohol and quinine, for he had got an attack of influenza which some of the other horses in the stable were suffering from and his temperature went up to 104°; all other symptoms aggravated in about a week; however, the febrile symptoms disappeared and with the exception of swelling of the limbs, particularly the hind ones, he came back to his original unsatisfactory condition plus an occasional recumbent position and moaning. Although the bowels were unsatisfactory, I did not like giving a stong purge, he was so weak, so I went back to the linseed oil. I should remark here that he was living almost exclusively on grass with a little bran. At last I determined to improve the consistence of the fæces and gave a quart of linseed oil with exercise, which had the effect of making them pul-

taceous. After six weeks of trying everything which suggested itself to me to bring about a successful issue with negative results, the firm ordered his destruction.

Post-mortem.—With the exception of a flabby dilated heart and a patch of fibrous-looking structure, about three inches long and two broad, on the liver, the stomach was the only organ presenting marked abnormalities, macroscopical. Two fissures of a very pronounced character were seen on the villous portion, having penetrated the muscular and villous coats in their whole extent, suggesting a chronic ulcerative process. The entire stomach showed great congestion at autopsy, which was made immediately at death. The other appearances noticeable on the mucous surface were of an entirely different character, and unlike anything which has come under my notice, or which I have seen described, namely, upon the villous mucosa irregularly distributed were to be seen elevated patches or nodules, raised, half circular, and darker in colour, soft in consistence, and of a size from that of a sixpence to a five-shilling-piece, giving the whole an appearance of a mulberry growth.

Report of Examination of Portion of Stomach of Horse for Andrew Watson, Esq., M.R.C.V.S.

Macroscopical.—One of the lenticular elevated patches was selected and a small piece taken from it; the growth seemed confined to the mucous and sub-mucous tissues, was soft and gelatinous in structure, and of a reddish colour.

Microscopy.—The portions were examined fresh, being frozen and sections cut. Sections showed under the microscope:—(1) Normal stomach tubes, with epithelium as usual; (2) disintegrated and obliterated stomach tubes; (3) presence of a round and small-celled growth corresponding to the characters of sarcoma, being embryonic, and almost no intercellular substance being present, this growth perforating and filling, and also growing abundantly between and pressing on the tubes, thus obliterating them and disabling the digestive function of the stomach; if the areas of the patches were all added together, they would represent rather more than half the area of the mucous membrane. The microscopical appearance corresponds well with the history of the case; the anorexia of variable degree; progressive emaciation; pain on injection of food, &c., point toward the malignant nature of the growths, of which nature there can no doubt be entertained that they were, viz., sarcomatous disease. None of the post-peritoneal glands were examined.

GEORGE BURBIDGE WHITE,
A.B., M.B., Univ. Dub., Fellow and Examiner (Biology), R.C.S.I.

THE GLANDERS OUTBREAK IN NEWCASTLE.—With regard to the outbreak of Glanders amongst horses in Newcastle, we were informed on November 20th that five of the animals seen to last week have been re-inoculated, and with the exception of one, are so far progressing favourably. The animal in question will be killed to-day. This will make 15 horses in all that have been slaughtered. Everything possible has been done to stamp out the disease.—*Newcastle Daily Chronicle.*

RUPTURE OF THE DIAPHRAGM AND HERNIA OF THE COLON.

BY W. R. DAVIS, NEW VETERINARY COLLEGE, EDINBURGH.

A CLYDESDALE gelding, the property of the Caledonian Railway Co., while engaged in shunting, failing to get off the line in time, was squeezed between two trucks. The animal appeared none the worse for the accident, and continued at work for a couple of hours. He then began to show signs of pain, and was immediately taken to the stable, and we were sent for. I found the horse (a very fine animal) standing quietly but looking greatly dejected. The body was warm, but there was not much sweating; the ears and extremities were cold; pulse 60, irregular and not very easy to find; the artery flaccid; temperature, 103. Respirations 16, but nothing characteristic about them. The abdominal sounds were absent. There was no tympanites and no trembling. The visible mucous membranes were red; the mouth warm.

There was no external wound or bruise, nor did any part of the parietes of the abdomen or thorax seem sensitive. No ribs were broken. Nothing abnormal could be felt per rectum, and an injection brought away some softish fæces

Suddenly the horse started from his state of quietude, looked round at his flank, went about the box in a very excited manner, and threw himself to the ground with great violence, rolled several times, and then rose again, and stood as before, quiet, indifferent, and with head lowered.

I gave him a dose of carbonate of ammonia and opium, and had hot blankets applied to the abdomen, and left him, returning in four hours. During my absence the patient had been, at times, extremely violent, so that a draught of ammonia and opium which I had left was only given after several attempts, and it was impossible to keep up the fomentations. It was not, indeed, very safe to handle him, as he threw himself down with such suddenness and recklessness. I now gave a hypodermic injection of morphia. This quieted the horse for a time, and I took advantage of it to make a careful examination of the thorax, when I could detect bowel sounds there.

The breathing still offered nothing characteristic; it did not differ from what one sees in a case of acute abdominal pain often enough. The pulse was thready. I now told the attendants that I had no hope for the horse's recovery, and leaving some sedative medicine, quitted my patient for the night. He died about 2 a.m.

On making a *post-mortem* the next day, a large oval-shaped rupture of the muscular part of the diaphragm on the left side was found, and in this was strangulated a portion of the great colon, about three feet having passed into the thorax. So tightly was the bowel held in the perforation of the diaphragm that it was as much as a strong man could do to withdraw it. The lips of the rupture were frayed, and it was evidently of recent origin.

There was no broken rib.

Perforations of the diaphragm are nearly always of congenital origin, a want of union between the muscular portion and the phrenic centre; in this case it was certainly traumatic.

Proceedings of the Royal College of Veterinary Surgeons and Veterinary Medical Societies, etc.

ROYAL VETERINARY COLLEGE, LONDON.

Inauguration of the Winter Session, 1896—97.

THE Winter Session at the College was opened on Thursday, 1st October, the inaugural address being delivered by Professor Macqueen. There was a very numerous audience, the large Lecture Hall of the College being filled to overflowing with students, members of the profession, and others who take an interest in the institution.

At the opening of the proceedings the chair was taken by Sir NIGEL KINGSCOTE, K.C.B., who said:—

Gentlemen,—Lord Crewe, who is on his way here, has telegraphed to us that his train is late. We have given him a few minutes' grace, but we thought we would not keep you waiting any longer. We hope his lordship will be here in a very few minutes, and therefore I think the best thing I can do is to call upon Professor Macqueen to begin his introductory address.

Professor MACQUEEN then delivered the inaugural address. He said:—

At the opening of a new session, long-established custom requires from a member of the staff some remarks of a general character touching the education and prospects of the students. To those who have just been enrolled, I have to say, on behalf of my colleagues, that we welcome your accession to the ranks, and assure you that no effort will be spared to give you every assistance in your studies. It is a pleasure to note such a large increase in your numbers. Large classes form the best testimonial a veterinary college can receive. Besides showing that the teaching gives satisfaction, they afford the best proof that our profession is gaining in public esteem. I need not congratulate you upon your choice of a vocation, for choice implies preference, from which it follows that you prefer the veterinary to any other calling. Assuming that your choice has been well founded, and not determined by accident, motives of self-interest, or by that fallacy---a love for animals, let me say that if you bring good average health and diligence to the work which lies before you, and, afterwards, determination to do your duty as members of a rising profession, you will have no cause to regret the day you entered upon the study of veterinary medicine. There are some very

important facts which have a direct bearing upon the career of the student, and which may very properly be mentioned at once, since the sooner they are realised the better. What is to be done should be done earnestly. Time is precious, opportunities are limited, money is valuable. Therefore you will not be justified in squandering your money, neglecting your opportunities, or wasting your time.

In the very old days, how long I know not, veterinary practitioners were regarded as a special race. They were said to have a peculiar alert cuteness of feature, and to wear a distinctive garb, redolent of aloes, turpentine, and tar. Addicted to original expletives, they were given somewhat to phonetic spelling, to chewing straws, and carrying, as a sort of symbol of industry, the never-failing ash-plant. Whether or not any such creatures ever lived outside imagination, no one knows, but there can be no doubt that the race is now extinct. Veterinary surgeons to-day are very much like other successful professional men. The comparison might be expanded to the limit recognised at heated discussions in Ireland, but modesty forbids. I may, however, add that veterinary surgeons have the usual endowment of the higher virtues, which they practise constantly. Their general knowledge is as good as that of their neighbours, and their professional attainments leave little to desire. They require, perhaps more than other men, patience, courage, nerve, and dexterity, and, to succeed in practice, they must be rich in observation, common sense, and tact of the better sort: not that counterfeit plausible deception, which may send reputation up like a rocket, but only to fall like the proverbial stick. To the question, What is a veterinary surgeon? the answer should be: One skilled by special training in the treatment of animals in health and disease. That is my conception of the position to which you aspire. What is the training? It is a long story, but I will tell you something of what it was and what it is. In my time, twenty-one years ago, the preliminary test of general knowledge was a mere appetiser, which everyone took heartily. The professional studies were served in two courses of seven months each, and there were two examinations. The subjects of chief importance were anatomy, physiology, and the principles and practice of veterinary medicine and surgery. Chemistry, botany, and materia-medica, with dissections, demonstrations, and clinical work completed the curriculum. Whilst no one could grumble at the quality of the mental food, its bulk was far from satisfying. It was a simple, plain diet, not difficult to masticate, easy to retain, and warranted to keep the gizzard of practice for an indefinite time. Looking back, although the curriculum was shorter, I think students had more leisure to exercise their senses and ruminate, or with Sidney Smith, "to watch sparrows and project idle saliva into the passing stream."

Now we are fallen on other and different times. The veterinary student's preliminary examination in general education is the same as that required from students of human medicine. The course of professional study has been extended to four years, and there are four examinations, partly in writing, partly oral, and partly practical.

The first year at college is given to junior anatomy, chemistry—theoretical and practical, botany, and zoology. The second to senior anatomy with dissections, physiology and practical histology, stable management, and the principles of shoeing. The third to morbid anatomy, pathology and bacteriology, with demonstrations and practical work, therapeutics, materia medica, and practical pharmacy, toxicology, hygiene, and dietetics. And the fourth year is devoted to the principles and practice of veterinary medicine and surgery, meat inspection, obstetrics, shoeing, operations, clinical work, and examination of horses for soundness. To qualify for the diploma (M.R.C.V.S.), a student of the Royal Veterinary College must give his attention to nearly 700 lectures, 200 demonstrations, and more than that

number of clinical and tutorial classes. He must attend the examination of 1800 or more animals brought to the College for advice and treatment, and watch the progress of the patients in the infirmary. He must take his share of the practice at the Free Clinique, where 5,000 horses and dogs are treated every year. Lastly, he must take an active interest in the examination as to soundness of from ten to eleven hundred horses of all classes.

That is the bare index of the curriculum at this college. Is the instruction insufficient? Was it ever better, or even half as good? If frugality was the motto twenty years ago, surely prodigality is the watchword of to-day. Yet dissatisfaction is sometimes expressed! Notwithstanding an extended curriculum, more exhaustive teaching, and the addition of supplementary subjects, to say nothing of vastly increased opportunities and greater facilities for acquiring knowledge, the complaint is made that students learn less now than formerly. "The voice is Jacob's voice, but the hands are the hands of Esau!" I frankly admit, and believe that everyone concerned regrets that our supply of diseased cattle, sheep, and pigs is unequal to the demand. Indeed, if anyone will suggest the means whereby a well-stocked farm can be lifted and set down successfully in Camden Town I feel sure he will not go unrewarded. But in spite of the absence of a superabundance of sick cattle, sheep, and swine, the pre-eminence of the present course of instruction can be defended against any champion of the alleged super-excellence of the past. In maintaining that our students are better taught and that they learn more than any class of past years, no reflection is made upon the sterling products of the teaching that is gone. The ever-green wisdom of the lectures by Spooner, Dick, Simonds, Gamgee, and other well-known professors, lives and flourishes in many of our best known men. But improvement was inevitable, and it must come again and again with increased knowledge, greater accuracy, and deeper learning.

The professional examinations are not conducted by the teachers, but by independent examiners appointed by the profession's parliament—the Royal College of Veterinary Surgeons—which sits at 10, Red Lion Square. Too often the Royal Veterinary College is confounded with the Royal College of Veterinary Surgeons. The distinction has some importance, and it should be better known. The Royal Veterinary College was the pioneer veterinary institution of this country. It laid the foundation of our science, and gave us our name. And in simpte justice we must acknowledge that the development of the veterinary profession, its progress and prosperity, are largely owing to the foresight, wisdom, liberality, and spontaneous efforts of the long line of noble and distinguished governors of the Royal Veterinary College. In 1844 the necessities of the time called into being the Royal College of Veterinary Surgeons, which was incorporated fourteen years before the corresponding body of the medical profession. From 1844 to 1881 the only function performed by the Royal College of Veterinary Surgeons was the examination of students. In 1881, when the Veterinary Surgeons' Act became law, the Royal College of Veterinary Surgeons took charge of the decorum of the profession, and subsequently, with more confidence in its powers, gradually raised the standard and increased the number of examinations. Quite recently the responsibility of fixing the attainments in general education of intending students was assumed by the same corporation, which now regulates and conducts the professional examinations, grants the diploma, and keeps the register of veterinary surgeons.

Touching the general education of veterinary students no one can fail to appreciate the effect upon our future of the recent improvement of the preliminary examination. But the reform was not obtained without opposition. It was held that the higher standard would bar the way to many deserving men who might otherwise enter the profession with no discredit to its members.

This objection contains the usual grain of truth, but it takes no note of the cheapness of education. Education never cost less than it does at present; and as every candidate for the preliminary must have lived for fifteen or sixteen years before the necessity of undergoing the test can arise, there can be no reasonable excuse for its putative ignorance. We have been told that poverty—want of money—is no crime, though, I confess, it is very inconvenient. But poverty of education in a youth destined for a profession is only a temporary misfortune. The true student never baulks at a difficulty; given time, enthusiasm, and its complement brains, no ordinary preliminary examination will stop his progress. It is unwise to predict without knowing, but it may not be long before a degree in arts will be required as a condition precedent to the registration of medical students. Should this happen, the Royal College of Veterinary Surgeons may put its imitative faculty to work, and—what, I need not say. Meanwhile, those who may be responsible for the general education of coming veterinary students should bear in mind that the recent advance in the preliminary is probably only the beginning of further extension.

Professional examinations when first instituted were intended to ascertain the progress made by the student in his studies and whether he had assimilated sufficient information to fit him for practice. Now they seem designed to test the agreement of one man with another as to certain symptoms, lesions, or other phenomena. If the two concerned happen to agree as to the appearance, function, or fate of something, which neither possibly has ever seen, one is made happy; but should they disagree owing perhaps to one having failed to see the thing in question, or its exact image, in the same condition as the other saw it, one is made unhappy. The happy or unhappy one is the student. Few men who have not been teachers, ever make satisfactory examiners. They improve, no doubt, with practice, but the cost in students' scalps is dear. Inexperienced examiners generally err by expecting ripe answers from raw heads. They may know that facts are stubborn things but they prefer opinion—the student's opinion—though in practice they might disregard it. They forget that questions though written may be ambiguous, and that terminology may grow out of date if not of joint. Questions of no earthly importance they sometimes put and gravely press as if the fate of Turkey depended upon the answer. Some examiners are pleased with short or index answers, but others, insisting upon the whole contents, are only satisfied with answers constructed after the redundant style of Eskgrove's judgment in a case of murder of a soldier by stabbing:—"And not only did you murder him, whereby he was bereaved of his life, but you did thrust or push, or pierce, or project, or propel the lethal weapon through the band or belly-band of his regimental breeches, which were His Majesty's.

I am glad to be able to say that the examiners of veterinary students are generally very fair, if occasionally leaning to inconsistency in their awards. At our examinations, honours are given to students who gain more than 60 per cent. of the marks, but somehow honours seem to diminish as knowledge grows. At the first examination students score well; at the second not so well. At the third they score badly, and at the final they seldom score at all.

Take the July examinations of this year in London, Edinburgh, and Glasgow, and see now the honours stand—Class A, honours, 26: Class B, 22; Class C, 8; Final (Theoretical and Practical) honours—only one.

The fewness of honours awarded in the C and final classes, I will not attribute to the defective knowledge of the students, not will I admit that the teaching at all the schools merits no better results, though it has been hinted that teachers are only human—if examiners are divine. But, when I tell you that, within two or three weeks after the July examinations, two of our "unhonoured" students gained nearly full marks and the first and

second places at the Fitzwygram Prizes' Competition — a much more trying ordeal—you may wonder what could be the cause of their comparative failure before the examiners of the Royal College of Veterinary Surgeons.

Leaving this delicate question, which demands much careful consideration, permit me to refer to some of the subjects set down in the examination schedule of the Royal College of Veterinary Surgeons. Although the instruction given here is necessarily based, to some extent, upon the requirements of the schedule, teachers are bound to cover more ground than is ever gleaned by examiners. The governors of the Royal Veterinary College endeavour to provide the best education that can be got to enable students not only to pass their examinations with credit, but to practise what they profess to the public satisfaction. Whether or not the time and energies of students and teachers, as at present husbanded, completely realise expectations others must judge. But the pressing exigencies of life, with no immediate prospect of an alarming increase in its span—would seem to suggest that the direction and limitation of our studies should, from the outset, be determined by the use we are to make of them in the future. All knowlege is good and general culture excellent, but encylopedic learning has no market —even were it possible to the ordinary man. Proficiency in the art and science of veterinary medicine is what we require, and to attain this we must be content to remain more or less ignorant of many branches of knowledge. Specialisation is all important. Our specialism begins and ends with the care of animals in health and disease, and our students should be thoroughly examined with that prime object constantly in view.

May I venture to suggest what might be done? Apply the pruning knife to the examination schedule, but do not shorten the period of study. Begin with the first examination, revise chemistry, botany, and zoology, and remember that many students now enter college fairly well acquainted with these subjects. What is the use of much of the chemistry now taught to meet the examination? Shall anyone reply as did Franklin when asked about the use of electricity—"What is the use of a new-born infant?" The answer would be good if we could discover in current chemistry the elements of future strength and usefulness in practice. Does the veterinary surgeon ever require to make sulphuric acid, alum, or pig-iron? Does he profit in the least from his endeavonrs to ascertain the composition of that "small white powder?" Does he ever trust his own analysis of urine, milk, or meal? In disinfecting a cowshed must he know how many cubic feet of gas will rise from a ton of burning sulphur? By all means give an examination on chemistry—physiological, pathological, and pharmaceutical, the chemistry of foods and of the farm—not the chemistry of chemical works, iron works, print works, and gasworks, but that which may be helpful to our other studies, and of use in later life.

(*To be continued.*)

GLASGOW VETERINARY COLLEGE.

THE opening lecture entitled, "Recent Advances in Medicine," was delivered by Dr. R. Cowan Lees, as follows:—

Mr. Chairman, Principal M'Call, and Gentlemen,—It gives me much pleasure to accede to the request of Principal M'Call that I should give you an address on the occasion of the opening of your winter session, but when I intimated to him that I would take up as my subject "Recent Advances in Medicine," I little dreamt that the President of the British Association, Professor Sir Joseph Lister, would select a somewhat similar theme as the subject of his eloquent and most exhaustive address. I will therefore try to

evade reiterating many of the points which he so ably discussed, and rather endeavour to give you a few suggestions, which I hope may prove to you an incentive to further investigation and observation.

In selecting the subject "Recent Advances in Medicine" (I mean medicine, of course, in its broad sense), it is not my attention to advert to the subject of synthetical preparations with which chemists (principally German) have so liberally supplied us for some years past, nor shall I dwell upon the subject of organic fluids with which Brown-Sequard created so much interest recently; it is my intention rather to take up that advancement in medicine and general pathology which have been directed mainly by the study of contagious or infectious diseases wherein the veterinary surgeon has co-operated with many earnest investigators, and also to show you that there are numerous opportunities for the veterinary student to distinguish himself in the work of original investigation. We are all bacteriologists nowadays, but I wonder if many of those now hearing me are aware that it is only within very recent years that the discovery had been made that by far the larger portion of the diseases of men and animals is due to the intrusion into the body of a living organism. Interesting observations and experiments were made long ago which resulted in unspeakable good to the human race; but the true meaning of these observations and experiments, scientists entirely failed to grasp until very recently; as for example, the discovery of the value of the inoculation of the small-pox virus, a knowledge of which was brought to this country by Lady Mary Montagu, and thereafter the the discovery of the value of vaccination by Dr. Edward Jenner—discoveries which, while of great practical usefulness, only have become intelligible by the researches of Pasteur—recently dead—Koch, Lister, and other bacteriologists now living. I presume that the majority of you know the story of Lady Mary Wortley Montagu, the wife of one of our ambassadors in Constantinople, in the year 1717. Lady Mary, when resident in Constantinople, was made aware of a system practised in that city of inoculating healthy persons with the virus taken from mild cases of genuine small-pox, in the belief that virus taken from mild cases, could only produce mild cases; also that they might be more speedily immunised or fortified aginst the ravages of the disease without waiting until they were fortuitously attacked by it, probably in a more rampant and sthenic form. Lady Mary wrote many letters regarding this practice to her friends in this country. and to show that she thoroughly believed in it, she had her own son inoculated with the virus of genuine small-pox, and this, too, very successfully. On the return of Lady Mary Montagu to Britain, she interested a large number of persons in the inoculation of small-pox virus, and there is no doubt that between the year 1718 and the year 1796, which was the date when Jenner introduced his newer and less dangerous inoculation, many thousands had been inoculated in different parts of Britain. It is stated by his biographers that Dr. Jenner thought out his cow-pox inoculation for thirty years. Whether he studied the subject for that period or not we are not in a position to state, but from his own notes we gather that in 1796 he inoculated his first case —a boy—so successfully with the cow-pox vaccine that the after-inoculation with small-pox virus, proved the boy to be immune to its influence. I must tell you, as veterinary students, that Jenner, in the early part of his investigations, thought that cow-pox itself was produced from a disease in the horse, commonly called horse-grease. He was driven to this belief because cow-pox was not observed by him on any farm where there did not exist a case of horse-grease. I merely mention this fact to show you what difficulties were experienced by such men as Jenner, because they had no knowledge whatever of the existence of organic germs, and the active part played by them in the production of disease. Unkind critics of to-day

are anxious to lessen, if possible, the beneficial effects of present-day vaccinations—quoting this early belief of Jenner's—but I would remind such persons that Dr. Jenner was then groping in the dark, whilst to-day we are in comparatively broad daylight. Drs. Woodville and Pearson, contemporaries of Jenner, came to the conclusion that cow-pox—the material used by Jenner for vaccination—was a form of small-pox modified by having been passed through the cow, and that the two are practically one and the same disease; that cow-pox, when introduced into the healthy subject, ran a shorter course, and produced a much less severe disease than the original small-pox, while at the same time it protected the inoculated human subject from a fresh attack of small-pox as much as a previous inoculation of small-pox would have done. Dr. Jenner accepted this view, and it has since been supported by the majority of medical men. A similar protective influence has, in recent years, been secured by Pasteur and others introducing the modified elements of disease into the animal system, as in the case of chicken cholera and anthrax, and, in the case of the human subject, of hydrophobia. The work of Pasteur has thus followed the methods of Jenner in other departments of pathology, and Pasteur's researches have explained, on scientific grounds, Jenner's empirical practice.

Pasteur.

Amongst the first subjects which Pasteur studied was the process of fermentation. The true nature of this process he showed to be due to the growth of a living organism in a fluid containing what was necessary for the growth of that organism; that the organism grew as long as its proper nutriment was present, and that its growth was accompanied by the excretion of certain products, gaseous or liquid, such as accompany the growth and development of all living organisms. There are many different materials that undergo this fermenattive process, and the organisms which set up the process also differ widely in their nature, in the food they consume, and the materials they excrete; but the value of this early part of Pasteur's work depends upon the clearness and accuracy with which he demonstrated the phenomena of the general process. Suppose, for example, we take a certain quantity of sugar in solution, and place in that sugar a small quantity of yeast, the process of fermentation will be set up and the yeast organism will develop and multiply so long as sugar is present. and carbonic acid and alcohol will be excreted. In time, if we do not add more sugar, sufficient alcohol will be produced to destroy the yeast organism. You might remember this about the yeast organism when we come to speak of Koch's investigations. Pasteur further demonstrated that the fermentative process was a very wide-spread one, that it included all the varieties of putrefaction and suppuration, that every change that took place in an organic fluid left exposed to the air was due to the growth of its special organisms, and was accompanied by the formation of more or less complex and irritating excretions. About the same time Tyndal and others were examining the particles floating in the air; and Lister, while a citizen of this city and surgeon in the Royal Infirmary, was showing that organic fluids, if protected from the air, underwent no change. Lister further investigated the action of the air and its dust particles upon wounds, and the various forms of the healing process, and that with such success as to completely revolutionise the whole domain of surgery. I shall not dwell upon Lister's great work, but advise everyone of you to secure a copy of the *Lancet* or *British Medical Journal* of 19th September, in which you will find his address, but will merely say here that no one, even though he may not be intimately associated with the advancement of medicine, can read that address without receiving much benefit from its perusal, and accepting as a fact that antiseptics with anæsthetics form two of the most important discoveries of the nineteenth century, especially when

viewed in their relation to surgery and the benefits they have conferred upon humanity. To return to Pasteur, we find him still busy with new thoughts, possessing as he did that type of mind which, when once satisfied regarding one point, necessitated his travelling to pastures new, so that he might still add to his knowledge and stimulate to further investigation. He was attracted to the subject of chicken cholera—of which disease, I daresay, a number of you know the pathology—which was raging with such disastrous results in the chicken farms in and around Paris at the time of his experiments. He noticed that the blood of those fowls affected with the disease was swarming with bacteria, and he believed that these bacteria were the cause of the chicken cholera. He secured pure cultivations of these bacteria, and found that by cultivating successive generations upon artificially prepared food, they lost a great deal of their virulence, and if injected into healthy fowls, produced a modified and mild form of the disease, and these fowls afterwards were immune to the severe form which was so prevalent. This Pasteur called *attenuation des virus*. He also adopted the same measures, and with equal success, in anthrax and other diseases. From these he interested himself in a disease which frequently comes before the veterinary surgeon's experience—viz., hydrophobia—a disease which Pasteur satisfied himself had its seat in the central nervous system. The majority of you are aware that in order to test whether a dog that has bitten anyone be rabid or not, a piece of the brain or spinal cord of that dog is secured, as fresh as possible, and injected in an appropriate manner into a rabbit. If the dog has suffered from rabies, the injection will kill the rabbit in a few days. Rabbits are differently acted upon by the toxin of rabies than dogs, and, curious to say, the disease is much intensified by being passed through the rabbit—a condition described by Pesteur as *renforcement du virus*—and it is found that the spinal cord of a rabbit that has died of rabies, is more virulent than that of the most rabid dog. That is, you see, the very opposite of attenuation. If the intensely virulent cord of a rabbit be hung in a perfectly aseptic chamber, it gradually loses its virulence, until in time it becomes completely inert. If an emulsion be prepared from the almost harmless spinal cord, and injected under the skin of an animal, it will produce very little disturbance in that animal's condition; and if followed at regular intervals (two or three days are generally allowed to elapse between the injections) by the injections of emulsions gradually increased in strength, a condition is produced in the animal whereby a more powerful injection can be tolerated than can be obtained from that of the most rabid dog. Though we have still a great deal to learn about the action of those toxins upon the animal tissues, there is no doubt we have gained the greatest benefits from such teachings. I would here like you to observe that Pasteur adopted two different methods by which he secured the attenuated virus of chicken cholera and hydrophobia, because it teaches us that a modified serum or antitoxin is not to be secured by adopting the identically same procedure in all diseases. We shall see a proof of this when I come to speak of the experiments which Dr. M'Call and I carried through, as compared with the method adopted to secure the antitoxin of diphtheria.

(*To be continued.*)

RINDERPEST IN SOUTH AFRICA.—The spread of the rinderpest in South Africa is being followed with great concern by those Germans interested in South African matters. The Government of the Cape Colony has engaged Professor Koch, the bacteriologist, and Dr. Kohlstock, the German medical adviser for East Africa and the tropical malarial regions, at very high salaries, to go to South Africa to study the disease, with a view to discovering a remedy for it. Both these gentlemen will proceed to the scene of their new labours within the next few days.—*Daily Telegraph.*

SOUTH DURHAM AND NORTH YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

(*Continued from page* 366.)

But the main cause of this paper being written is the advance that has taken place in our knowledge regarding the ætiology of tuberculosis during the last decade. Owing to the discovery of the specific cause of the disease by Koch, heredity as a cause is now looked on by many as perfectly absurd. Tuberculosis, it is said, is due to the bacillus and nothing but the bacillus; and careful *post-mortem* examination of young animals has proved that it is very seldom transmitted. Granting that the disease is seldom demonstrable in the newly-born animal, is there not here a misunderstanding owing to a confusion of terms? Tuberculosis that exists at birth is not merely hereditary, it is also congenital; and the fact of a disease seldom being congenital is far from being proof that it may not be frequently hereditary. Experience teaches that tuberculosis is hereditary to as great an extent as most diseases included in that class. And although we believe in the contagiousness of the affection, and believed in it long before the discovery of the bacillus by Koch, that does not prevent us believing that heredity is a powerful predisposing cause. Notwithstanding the immense losses caused by tuberculosis, and the fact that "galloping consumption" is not unknown in the bovine species, it is not usually a rapidly fatal disease. When animals are carefully kept and maintained in good condition, the fatal cases, even in an affected herd, are not very numerous for the first few years. I have no hesitation in saying that a cow affected with tuberculosis may go on breeding for years, even for the full term of her natural life, as the natural life of a cow goes, without any suspicion attaching to her. But the offspring of this cow will, as a rule, be less robust than herself. Still, the majority of her daughters may go on breeding as their mother did before them, some of them escaping the disease for a longer or shorter time, while others may escape it altogether. But each succeeding generation, following the direct line of those that become affected with the disease, have a greater tendency to become affected if exposed to the contagion; and if the sire is also affected, the result is still more rapid, the percentage of fatal cases also rapidly increasing. That is to say, the disease seems to increase in malignancy with each succeeding generation.

There is no immunity conferred in the case of tuberculosis. There is rather an increased receptivity in the organism for the bacillus; or as it might preferably be put, a diminished ability to defend itself against its attacks.

Now I do not claim that all this is due to heredity; a great deal is due to contagion, but heredity plays a very important part. Any animal that seems delicate or weakly, instead of being fattened and sent to the butcher, is more carefully nursed and pampered; and if kept in good condition, often survives to propagate its species. And what like are they? Their coats become soft and scanty, their skins fine and thin, and on being handled, they are described as being like silk. In light-coloured animals often every blood-vessel in their ears can be seen when they stand between one and the morning sun. The hardy robust constitution is lost, and we have a delicate weakly subject, liable to be seized by the first disease it is exposed to, and the most common one is tuberculosis. There is something about these animals that are liable to become fatally affected with tuberculosis, not easily described, but which can often be detected by the experienced eye. I do not mean to assert that this can be done in all cases; no, nor in the majority of cases. In testing herds with tuberculin I have been as much surprised in the animals that reacted as anyone could have been. But these were probably animals from a healthy ancestry, that might have lived for years without manifesting any clinical

symptoms; while those that are likely to be fatally affected by the disease can often be picked out. I will even go further than this, although I may not get many to agree with me in this sceptical age. I have not the least doubt but the tendency to become affected with tuberculosis can be transmitted by the male. Now, do not misunderstand me. I do not mean that the disease is congenital, and it may be the transmission of an acquired character; but a bull bred from generations of affected ancestors transmits to his offspring what I might call the tubercular diathesis; at least, he transmits his weakened, his impaired constitution, a diminished power to resist the attack of the germs of the disease.

Do not assume that I expect these animals to become affected unless they are exposed to the contagion; but, being exposed, they fall an easy prey to it. It is argued that when tuberculosis is stamped out, when the risk of contagion is gone, hereditary transmission need not be feared. Granted; but it will be a long time yet before tuberculosis be excluded from our herds, and none of us will see it banished from the human species.

Is not liability to a disease as likely to be transmitted as an immunity from it? I will never forget when rinderpest was raging in this country, in the early winter of 1865 and 1866, about an outbreak at a small farm in Kincardineshire. It was before the stamping-out method was adopted; and out of some thirty animals all died but three. These were a cow and two of her daughters—one two years old and the other one. Here was a case of hereditary immunity; not complete, perhaps, but at least partial. Diphtheria and scarlatina in the human subject often manifest a tendency to attack particular families. Many may be equally exposed to the contagion, but only one or two families are attacked, and of these few members may survive; while strangers living with them, if attacked at all, generally escape with comparative ease. And these are parasitic diseases. Then take the case of cancer. I knew a family of three brothers, the last of whom died recently, and all three died over fifty years of age of cancer of the stomach. Now, although it is not conclusively proved that cancer is a parasitic disease, the probability is in that direction. Yet the chance of contagion being the cause of the disease in these cases is very remote, and it surely will not be argued that they were congenital. I know another family, or rather a group of related families, the majority of the male members of which have died of disease of the heart between the ages of fifty-five and sixty-five, and most of them from what has been termed "failure of the heart's action." That could scarcely be congenital, but it is undoubtedly hereditary.

Since writing the above I have received my copy of the *Proceedings* of the National Veterinary Association at its recent meeting at Great Yarmouth; and observing the confusion that arose there regarding the heredity of tuberculosis, I hope you will excuse my referring to the subject again, even at the risk of some repetition.

It is quite evident that it all arose from the confounding of the terms "congenital" and "hereditary," two words which, although somewhat analogous, are by no means synonymous or interchangeable. Had the mistake not originated with those whose eminence in the profession lends weight to their statements, and leads them to be received with respect, I would not have stopped to notice them; but believing them to be misleading and even dangerous, it is my duty to try and neutralise, as far as possible, the mischief that has been done.

There is not the least doubt but to the great majority of naturalists and biologists the two words convey different meanings. Turning to the "Century Dictionary," the word congenital is defined as "Produced or existing at birth. . . . From birth."

Any peculiarity or characteristic, any abnormality or malformation—it may

be an excess or a deficiency that is in existence and demonstrable at birth, is congenital. Then what is heredity? I have already defined it so far. Turning again to the "Century Dictionary," it is said to be "Transmission of qualities or characteristics, mental or physical, from parents to offspring. The tendency manifested by an organism to develop in the likeness of its progenitor. The principle or fact of inheritance or the transmission of physical and mental characteristics from parent to offspring, regarded as the conservative factor in evolution, opposing the tendency to variation under conditions of environment."

Now this is a very full definition, but without the slightest indication that it has the same meaning as the word congenital.

The cases I have given of diseases occurring in families, fifty, sixty, and more years after birth, are acknowledged to be hereditary, as well as the immunity or partial immunity from some diseases frequently met with, but they cannot be considered congenital. Now, looking at its application to the case of tuberculosis, it seems evident that, at the Yarmouth meeting, it was held that it could not be hereditary, because it has been proved, and I presume everyone will admit, that it is very seldom congenital. In the case of transmission from the male progenitor it was held to be absurd, because tubercular disease of the testicle in the bull was almost unknown. It is certainly very rare. I have only met with one case in practice, but strange to say, I have seen one case recorded in the *Recuil*, and another in the *Journal of Comparative Medicine and Veterinary Archives*, since I read this discussion. But that is apart from the question. It is admitted that tuberculosis is a contagious disease due to pathogenic microbe. It is denied that it can be hereditary, transmitted from the male progenitor, unless one or more bacilli are conveyed in the sperm-cell, the male germinal element, to the germ-cell or ovum, the female element, to be included in the new organism or individual.

For my part I cannot look upon that proposition as anything but absurd. As far as congenital disease is concerned, if due to inheritance from the male progenitor, the conveyance of the contagious element in the sperm-cell is absolutely necessary in the case of a parasitic disease. But in the case of a hereditary disease it is quite different It will be said, "Then the disease itself is not hereditary; all that is hereditary is a tendency or predisposition to that particular disease." Precisely so, and nothing else is contended for in purely hereditary diseases. No one will assert that in the cases I mentioned of cancer and heart disease, the disease itself was congenital. In the case of cancer, which is in all probability a parasitic disease, will it be contended that the parasite must be transmitted in the sperm-cell before it is admitted that the hereditary predisposition is due to the male progenitor? Certainly not. In the case of hereditary as distinct from congenital disease, I am not aware that anyone alleges that the actual disease itself is conveyed from parent to offspring, but only a tendency or predisposition to become attacked by the disease when circumstances are favourable to its development, and not otherwise. If this is not the case, our list of diseases hitherto considered hereditary will have to be curtailed almost to the vanishing point.

But it is concerning diseases connected with osseous tissue that the greatest diversity of views are held regarding their hereditary nature—splints, spavins, ringbones, sidebones. The hackneyed phrase as to their ætiology, "shock or concussion. external violence, and hereditary predisposition," occurs to me as I write the list. I do not mean to say that these are the only causes, but they are the most common causes of the diseases. Another very important factor in their development is the conformation of the animal, and no one will question the fact of conformation being hereditary. Round bones, curby hocks, short upright pasterns,—all hereditary characteristics,—are of the utmost importance in the development of disease.

Splints are classed as hereditary by many authorities. Others have denied their hereditary nature because they are non-existent at birth, and consider them due to environment. Unfortunately they are so common that not one horse in six used for fast work on our roads reaches eight years old without a splint or splints. Fortunately they are seldom a cause of permanent lameness. The fact of their being so common is almost sufficient to nullify any proof their reappearance in the progeny might give of their hereditary nature. And they might, with a fair amount of reason, be as well ascribed to environment, in other words, to the concussion the canons are subjected to during fast work on our roads and streets. In those less numerous cases in which splints develop in young growing colts, concussion on hard roads cannot be blamed. They are undoubtedly due to the young, soft, unmatured bones being ill fitted to bear the weight of the rapidly-growing body, and are nature's attempt to strengthen them by throwing out a support or stay at the weakest part. And we find that as soon as the necessity for this stay or crutch is removed by the bones becoming fully developed and consolidated, the splint or stay becomes removed without any treatment at all. Aud we see the whole process taking place without the animals ever being lame.

But is not this weakness, this failing, this necessity for a support or stay, an inherited condition? I believe it is.

There seems to be more reason to doubt the hereditary nature of *spavins* than that of any of the diseases mentioned; the reason being that notwithstanding the number of different types of hock to be met with, any hock, even the large, broad, flat hock, may develope a spavin. But for all that there is not one breeder in a hundred that will breed from a horse with a spavin if he can get one without it, other things being equal. In looking for horses in a fair I have been surprised at the number one finds with enlargements over the seat of spavin, which, we are told, are due to the animal being kicked over the part a short time before; the general opinion evidently being that a spavin due to external violence is not so bad as what we might term an idiopathic spavin.

Coming to *ringbones*, they are undoubtedly very largely due to conformation. The short, stumpy, upright pastern is avoided by everyone who pretends to know anything about a horse. As the farmer's wife in the West country said to the groom who called at the farm with his horse during her husband's absence, "Na, na, laddie, that horse is nae yuse here; he has nae quets ava man."

Sidebones are—if any of those diseases of the bones of the limbs are—an acquired character. They are certainly not congenital, and they as certainly reappear in the progeny. There is no doubt but they are much more common in our heavy horses than they were forty or fifty years ago. Why should this be? Our roads are better than they were fifty years ago, and to that extent are harder on the surface. Our heavy horses are mostly shod with calkins, so that the frog cannot come in contact with the ground. There is thus no support for the centre of the foot when weight is thrown on the limb, and it sinks downwards and backwards to a much greater extent than would be the case were it well supported. The effect of this is to drag the lateral cartilages inwards and downwards to an unnatural and inordinate extent, each time the weight of the fore-quarters is thrown on the limb. This has the result of setting up a chronic inflamation in the cartilages, which terminates in sidebones.

Very few, I presume, will call in question the hereditary nature of sidebones, and if due to the environment, *i.e.*, the nature of the roads, the method of shoeing, etc., then they are an instance of the transmission of an acquired character,—although I have little doubt but it will be argued by upholders of Weismann's theory that it is merely a case of similarity of environment; that

similar surroundings are sufficient to hammer on similar changes on successive generations, as it has been described by Thomson.

Navicular arthritis, as it is termed, although it is questionable whether the common term, navicular disease, is not a more suitable name, as the diseased condition seems frequently to originate in the bone, is another disease the hereditary nature of which is pretty generally admitted. Many will say that it is a result of conformation and the hard roads, as it is in well-bred horses that are often used as roadsters in which it is most common. But this is far from being always the case. I remember making a *post-mortem* examination of the feet of a thoroughbred mare that never did much road work. She had been lame for at least ten years, and the nature of her lameness had puzzled some of the most experienced veterinary surgeons in the country; the main reason being that she had as good, well-shaped feet and as open heels as could have been wished. But the *post-mortem* revealed old-standing navicular disease. I mention this case because I had every opportunity of observing a daughter of this mare. Like her mother, she had beautiful feet. But her training was scarcely finished before she began to manifest that tantalising fugitive lameness, sometimes evident, sometimes not discernible, so characteristic of commencing navicular disease.

I need only say that it became confirmed, although I did not get the opportunity of making a *post-mortem* upon her.

Curb is another disease very often said to be due to conformation, and undoubtedly curby hocks are as surely hereditary as anything can be. I remember a thoroughbred horse that travelled my native district, which had very passable hocks himself, but whose stock could be recognised by their hocks wherever they were met with—recognised as readily as Clydesdale men could recognise the gets of "Darnley" from those of the "Prince of Wales," also by their hocks. Be that as it may, curbs are generally hereditary, and not very rarely congenital.

Another abnormal condition, not usually looked on as a serious one, but which is certainly hereditary, is that known as "*windgalls*." I remember a stallion, also a thoroughbred, the stock of which nearly all developed windgalls; that is, windgalls much larger than the ordinary puffy swellings, which are as common as splints. These were certainly not congenital, seldom appearing before the animals were yoked, and very seldom causing lameness. It could not have been considered a very serious defect in the sire, as he travelled the same district for at least twelve years.

On diseases of the feet I will not enter. Here at least everyone will admit that conformation is of the greatest importance. Given what I might call a bell-shaped hoof, narrow round the coronet and expanding considerably towards the ground, even at their quarters,—it does not matter how carefully it is cultivated and shod, no amount of attention will ever make it a good foot, whatever the quality of the horn may be.

We have not time to consider diseases such as "roaring," and those nervous affections which are generally admitted to be hereditary; but we have to some extent made our position clear, and possibly done something to advance the discussion of this important subject.

In conclusion, we find that we must fall back on the aphorism that "like begets like," that an organism tends to develop in the likeness of its progenitors. Notwithstanding the ability and determination with which Weismann's hypothesis is at present upheld, I cannot subscribe to it in its entirety. I fail to see how some of our existing species could have undergone the transmutations they have admittedly done, as revealed by geological data, apart from some other influence than Weismann acknowledges.

However, it will not require much argument to convince any experienced veterinary practitioner that many diseases are hereditary; more especially

diseases connected with the locomotory organs Even if it is argued that they are generally due to conformation. it does not diminish their importance. It rather adds to the value of pedigree ; the importance of an ancestry with an unsullied record, unblemished by defects that are likely to appear in the progeny, and diminish materially their usefulness and value.

As Edwin Arnold puts it in his " Light of Asia "—

> That which ye sow ye reap. See yonder fields!
> The sesamum was sesamum, the corn
> Was corn. The silence and the darkness knew!
> So is a man's fate born.
>
> He cometh reaper of the things he sowed,
> Sesamum, corn, so much cast in past birth;
> And so much weed and poison-stuff which mar
> Him and the aching earth.

I can only look on the weed and the poison-stuff as the weaknesses and hereditary taints inherited from his progenitors.

In the discussion which followed, Dr. Hern and Messrs. Snaith, Dudgeon, Awde, Smith, Elphick, and Roberts took part. Professor Dewar, having replied to the various speakers, the President proposed that the best thanks of the Association be presented to him for his kindness in having come there and read so interesting a paper.

The SECRETARY seconded the proposition, and it was carried by acclamation.

The Professor replied, and said that he had derived much pleasure from his visit, and hoped at some future time to come again.

In the evening the members sat down to dinner in the hotel. Mr. H. H. Roberts occupied the chair. After the loyal toasts had been duly honoured, Mr. SNAITH proposed "the Royal College of Veterinary Surgeons."

Professor DEWAR, in responding, said he was a young member of that body, but during the time he had been connected with it the Council had been busy in trying to look after the interests of the profession. For some time past the Council had been introducing changes in the matriculation examination They had been ably led by their late president, and he had no doubt the present president would do his best to steer a straight course in the interests of the profession.

Mr. ELPHICK also responded, and said he could assure them that the Council of the Royal College of Veterinary Surgeons tried, at any rate, to do their very best for the profession. The Council spent a great deal of time, and he would like to throw out a suggestion to the members present, viz., that the Council should be better supported than they now were by suggestions from the profession as to what they really wanted, and which would strengthen their hands. He thought the change in the matriculation examination was a step in the right direction. With regard to veterinary surgeons holding appointments as meat inspectors and inspectors under the Milkshops and Dairies Act, he referred to a paper by Dr. Sims Woodhead at the Sanitary Congress in Newcastle, in which he maintained that the veterinary surgeon should run in harmony with the medical men, and that it was impossible for the medical officer to carry out his duties without the veterinary surgeon.

Mr. C. G. HILL proposed the "Sister Profession," to which Dr. HERN replied.

Professor DEWAR proposed the toast of the "South Durham and North Yorkshire Veterinary Medical Association," to which the Secretary replied. During the evening songs were rendered by the members to the accompaniment of Mr. C. Stephenson, A. C. O., and an agreeable evening was spent.

W. AWDE, *Hon. Sec.*

SOUTHERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

(*Continued from page* 373.)

Treatment of Gastric Catarrh.—My first case puzzled me. I treated it wrongly, too, medicinally, commencing with sedatives—bismuth, bicarbonate of soda and opium—the consequence being the case did not make so rapid a recovery as I look for now. I now recognise the existence of some unsuitable food in the animal's stomach which is producing the symptoms observed. I therefore administer linseed oil, tincture of cardamoms, and turpentine, followed in a few hours by the above-named sedatives, which are continued at intervals of from four to six hours, as the case requires. These are administered in cold gruel, the result being always highly satisfactory. The only thing in the way of food allowed for a few days are cold sloppy mashes and cold gruel.

The treatment of acute gastritis depends medicinally upon the irritant received, although the administration of agents to relieve pain, and the administration of cold demulcent drinks will be beneficial to the patient. In these cases, however, I should regard recovery as rare, and in rupture of the stomach, recovery, of course, is impossible; all that can be done here is to relieve the sufferings of our unfortunate patient.

From the above I hope I have made it apparent that, although I recognise the difficulty with which vomition takes place in the horse, I by no means regard it as so rare as I was taught to believe, neither do I regard it in the majority of cases as accompanied by grave lesions. But, on the contrary, in the majority of cases it is amenable to treatment. And further, the condition of the mucous membrane at æsophageal opening has little, if anything, to do with the difficulty of vomition in the horse. Further, there are two conditions in which we have vomiting, one fatal, the other not necessarily so. That when the muscular coat of the stomach is ruptured I regard vomition impossible. Here I might have my attention called to the experiment where the dog's stomach was removed and a bladder fixed in its place and vomition induced. But bear in mind the large œsophagus of the dog and how well this artificial stomach can be subjected to pressure all round, the position the animal affects during the act which makes the condition more like an indiarubber ball slightly suspended and connected with an open canal, the least pressure on the ball being sufficient to expel its contents. All this is significantly absent in the horse.

In bringing this short paper to a close, I may add that I have noticed the above symptoms during my short professional career, and from them I have deduced the conclusions put before you, which I ask you to criticise. If you think them wrong, please say so, and put me, a young practitioner, on the right path.

Discussion.

Mr. SIMPSON thanked Mr. Tutt for his paper and for bringing such an interesting subject before them for discussion. He also thanked him for reminding them of the anatomical construction of the stomach and the parts connected with it. He, however, still held to the opinion he had arrived at some time ago, that nature never intended the horse to vomit, and if it had the abdominal walls would have been differently placed. Again, if they looked at the cardiac end of the stomach to the other end of the œsphagus, and remembered the construction of the small pyloric orifice, they would see that if the horse did vomit it was a matter of great inconvenience and danger to it. Mr. Tutt had described it as an involuntary act. When it did take place, which was rarely, the horse, knowing the amount of inconvenience it occasioned, avoided it as much as possible. Mr. Tutt had described certain acts which had come to his notice where the animal was affected with vomi-

tion, as he described it. He was in the best position to say if was a true case of vomition, but from the symptoms described he ventured, with every respect, to think Mr. Tutt was mistaken in his case. He was of opinion there must have been some defective condition of the œsophagus, and the symptoms observed were simply those which generally accompanied defect in the thoracic portion of the œsophagus. He was of opinion the symptoms of an occasional discharge from the nostrils and mouth were caused by the lodgment of some food in the thoracic part of the œsophagus. Mr. Tutt described it as the non-fatal part of vomition, but he hardly recognised it in the non-fatal form. When they got it from the stomach itself then there was a serious defect of that organ and death always followed. They must all agree with Mr. Tutt that vomition was impossible if the stomach and muscular fibres were interfered with by an extensive rent.

Mr. CARTER said he had had several cases of vomition in horses but the major portion of them occurred during constipation or inflammation of the bowels. Oil and gruel had been poured in and the stomach having become immensely distended vomition had taken place. He had generally found that laminitis had resulted. He did not think he had ever seen a horse vomit with a ruptured stomach, but they got those symptoms when a horse was choked. He had had several cases of vomition but it generally finished up with laminitis or purgation.

Mr. BARFORD said he had had one or two virulent cases which, however, had been connected with peritonitis or inflammation of the bowels. Unfortunately he had never been able to save either of his cases which, however, however, were not taken in the earlier stages. He was of opinion that vomition was rare, and in the majority of cases ended fatally.

Mr. HALL remarked that as far as his experience went he was at one with Mr. Simpson in thinking it was a rare occurrence that the causes of vomition were amenable to treatment. He was also of opinion that in the case mentioned by Mr. Tutt where there was emphysema in the neck, it must have been due to some defective condition of the œsophagus. The cases which had come under his personal notice had always been due to the administration of hellebore, which in some parts of the country was a favourite treatment for hunters after being taken up from grass. The stud groom went to the chemist and got hellebore balls, and when water was given after, a spasmodic condition was set up and vomition followed. Such cases when dealt with by some demulcent, such as linseed oil or new milk, were amenable to treatment. In one case the animal certainly vomited and recovered, but about twelve months afterwards it was taken with the same symptoms and died. In that case there was peritonitis and rupture of the stomach, which had taken place some hours before, the rupture being the cause of the peritonitis. That was the only case which he knew had recovered (which it did the first time) except cases which had been due to poisonous substances or hellebore.

Mr. WHITLEY-BAKER having thanked Mr. Tutt for his interesting paper, said his experience of vomition in the horse was that—as Mr. Carter had said—it did not occur when a ruptured stomach was the whole and sole cause of death. His experience had been that ruptured stomach had occurred when there was volvulus, especially when the twist had been near the pyloric portion of the stomach. In this condition, if the stomach was full, the animal strained violently, and with the excessive exertion, the obstruction to the opening of the cardiac orifice was overcome, and a portion of the contents was vomited. In some cases he had noticed a little watery fluid pass from the stomach, but he must say he had never been able to bear out by experience the opinions of some of the writers of old that vomition was a sign of a

ruptured stomach. His experience had been that a truer symptom was when the animal sat on its haunches more like a dog to ease the pressure on it. With respect to the treatment, his experience had not been the same as Mr. Carter's. He had seen cases recover in choking, but when he had had any amount of vomition, the cases had in 50 per cent. been fatal, and were due in the majority of cases to twisted bowel. In those cases he had seldom obtained a recovery, whilst Mr. Carter informed him his cases had all recovered. He thought in cases of recovery it was due more to the bowel righting itself from a twist than to their exertions.

Mr. PACK said he thought the theory that ruptured stomach was necessary to cause vomition was exploded, and he was prepared to state that a rupture or any lesion of the stomach was not necessary to cause vomition. His experience of vomition cases was limited, and three out of four cases were fatal. About twelve months since he saw a colt which had been running out at grass. The animal was certainly vomiting, and had spasms giving indication of choking. He administered some oil, which was not returned, but some grass food was returned. The animal did not at all appear *in extremis*, and he left some sedative medicine and liniment for the neck, bu when he saw it the next morning the colt was dead. On opening it, he was surprised not to find something wrong in or near the œsophagus or stomach, but eventually found that the intestines in two places had fallen over and formed a half twist. There was an accumulation of grass at the twist kept back by the small orifice, but the oil had found its way through. All he found was the twist, and an accumulation there of undigested food through which fluids appeared to have passed. About six months before that he was asked to see a cart-horse, which certainly was vomiting through both nostrils, heaving a good amount of slushy food into its manger, and without any spasm. It made good progress during the day; he ordered it to be given no food, so as to let the stomach have a rest. It recovered. Some ten years ago he saw a horse which had gastritis after a severe attack of colic. Vomiting commenced, and the horse soon died. On opening it he found it had gastritis and a ruptured colon as well.

The PRESIDENT said his experience was that vomition in the horse was rare, and he had seen very few cases, which generally were due to colic or enteritis. As to vomition being a symptom of rupture, he did not think it could be. Cases of vomition, he thought, were, as a rule, to be traced to indigestion and colic, and the very few cases he had seen had been fatal. He had found rents in the stomach, and the question which occurred was whether vomition occurred before or after the rupture. He should like to hear more about the treatment in cases of vomition. He should think the treatment would be to clear the offending matter or let the stomach rest.

Mr. SIMPSON said since he had been listening to the other speakers a case had occurred to him which had come under his observation. It was an interesting and somewhat amusing case, and bore out the view he had already expressed with regard to the condition of the thoracic portion of the œsophagus. After the animal had its gruel after hunting, a large swelling took place in the neck, which disappeared a short time after the animal finished drinking. It would then take another drink with the same result as before. He tested the horses with water and there was a swelling at once in the œsophagus which, however, gradually subsided. He distended the œsophagus to an enormous extent upon which a quantity of slush was emitted into the manger. The animal was killed, and on examining it he found unmistakable evidence of paralysis of the œsophagus in this position. If that condition existed in that portion why might it not in the thoracic portion? If it did it would account for the symptoms described by Mr. Tutt and Mr. Pack.

Mr. PACK mentioned the case of an old pony which had stuffed the œsophagus so completely with meal that it could be easily felt on the left hand of the neck. There appeared to be no symptom of choking.

Mr. WHITLEY-BAKER pointed out that the medical profession generally considered vomition was nearly always due to the obstruction of the bowels, and he thought as a general rule veterinary practitioners might take a valuable hint from that.

Mr. TUTT was unable to reply to the various speakers having to leave before the discussion was completed.

New Members.

The PRESIDENT welcomed Mr. Hall amongst them as a new member of the Association, and proposed as a member Mr. F. Spencer, of Basingstoke.

Morbid Specimen.

Mr. E. WHITLEY-BAKER produced a fine specimen of a cystic calculus which he had taken from a mare belonging to Dr. Batterbury, of Wimborne. When he first discovered the calculus he thought it could be taken away easily. The operation was performed on the mare while standing, and the animal gave him no trouble afterwards. The highest temperature was 101°, and she was at work within a week. Previous to the operation the mare, after a journey, strained violently when passing urine, in which was blood and pus.

Mr. SIMPSON congratulated Mr. Baker on the success of his operation, and said such operations gave the profession an excellent name. In a calculus he once exhibited there was a much smoother appearance than in the specimen before them, whilst there was a distinct depression. He thought they must both have been lodged in the neck of the bladder.

Mr. BAKER said he did not think the specimen in question was ever lodged there, as he found it rather difficult to get it there for extraction. If it had lodged there, he thought it would have been more easily extracted. The fact of the animal straining only after a journey he attributed to the movement causing the calculus to roll about in the bladder, and so set up irritation of the lining membrane.

Professor Macqueen's scheme for amalgamation with the National Veterinary Association was next introduced, and the matter was freely discussed, and in the end it was unanimously agreed to support the scheme.

On the proposition of Mr. CARTER, seconded by Mr. SIMPSON, it was decided to hold the next meeting at Southampton in March next.

A vote of thanks to the President for taking the chair concluded the business, and the members afterwards dined together, spending a very pleasant evening.

C. PACK, *Hon. Sec.*

YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

The autumn quarterly meeting was held at the Queen's Hotel, Leeds, on Friday, October 30th. Mr. J. Clarkson, of Garforth (president), was in the chair; and there was a large attendance of members and visitors: Messrs. Frank Somers (hon. sec.), G. E. Bowman, A. McCormick, A. W. Mason, H. G. Bowes, J. Brand, W. F. Greenhalgh, S. Wharam, Charles Steel, A.V.D., Yorkshire College; Vet.-Captain R. W. Raymond, Leeds; J. E. Scriven, (hon. treas.), Tadcaster; J. Clarkson, Garforth; G. Pickering, J. Cooke, Scarboro'; F. Scott, Knaresboro'; A. W. Briggs, Halifax; F. W. Clough, Morley; S. Chambers, Kirkheaton; H. Newsome, J. S. Carter, Bradford; Philip Deighton, Selby and Riccall; T. Fletcher, Sheffield; E. H. Pratt, Northallerton; J.

W. Lazenby, Boston Spa; F. Hallilay, Dewsbury; M. Robinson, Barnsley; J. Atcherley, Harrogate; H. Snarry, York; and G. Whitehead, Batley.

Mr. FRANK SOMERS read letters of regret at inability to be present from Professors Pritchard and McFadyean, Messrs. Thomas Pratt, Ripon; A. E. Harrison, Halifax; C. T. Lang, Bridlington; and Mr. J. Abson, Sheffield.

New Member.

On the motion of the SECRETARY, and seconded by Mr. J. E. SCRIVEN, Mr. C. DRABBLE, of Bradford, was elected a member of the Association.

Correspondence.

Correspondence was read by the SECRETARY with regard to the reflections alleged to have been made by a Leeds butcher upon the veterinary profession on the occasion of a deputation of the National Meat Federation to the President of the Board of Agriculture. The incident was closed.

Financial.

The TREASURER formally presented his annual balance sheet, which was considered very satisfactory, as it showed an increased balance at the bankers.

Election of Officers.

Mr. W. F. GREENHALGH rose and proposed that the new President should be Mr. G. Whitehead, of Batley, who, he said, would do credit to the Association in every way. He thought that Mr. Whitehead was entitled to the presidency, to which he was eminently qualified.

Mr. A. W. MASON seconded with feelings of pleasure.

Mr. G. E. BOWMAN supported. He recalled the fact that he nominated Mr. Whitehead for the position a twelvemonth ago, but the nomination was not carried. He hoped, however, that the resolution on this occasion would be unanimously agreed to, for he was sure that Mr. Whitehead would make them a good president.

Mr. H. SNARRY and the CHAIRMAN also supported, remarking that Mr. Whitehead had stuck well to the Association and was a very fit man for the presidency.

The resolution was unanimously agreed to.

Mr. WHITEHEAD was not present at the time, but when arriving at a later stage of the proceedings, he appropriately thanked the members for the compliment that they had paid to him.

In accordance with the rules of the Association the retiring president became one of the vice-presidents. The other two positions were filled by Mr. McCormick, proposed by Mr. SCRIVEN, seconded by Mr. G. T. PICKERING (York), and supported by Mr. SOMERS; and Mr. A. W. BRIGGS moved the election of Mr. S. Chambers, and the CHAIRMAN seconded.

On the proposition of Mr. SOMERS, and seconded by Mr. A. W. MASON, Mr. Scriven was re-elected treasurer; and Mr. Somers was again asked to fill the office of secretary, the resolution being proposed by Mr. SNARRY, and seconded by the CHAIRMAN.

The CHAIRMAN proposed that Mr. A. W. Mason and Mr. McCormick be the auditors. This was seconded by Mr. J. COOKE, of Scarboro', and agreed to.

The Late Mr. B. Smith, of Barnsley.

Mr. T. FLETCHER, of Sheffield, in suitable terms, proposed a vote of condolence with the family of the late Mr. B. Smith, of Barnsley, for whom professionally he had the greatest respect.

Mr. A. W. MASON seconded. He said that in its early days Mr. Smith

took a very deep interest in the Association. They had lost a good friend and a very useful member of the Association.

Mr. SNARRY, in supporting, mentioned that the deceased gentleman had filled the office of president.

Mr. SCRIVEN added a few appropriate words, and the resolution was unanimously carried.

A letter was read on behalf of the relatives of the late Mr. Axe, thanking the Association for their kind expression of sympathy. (This letter was written by Mr. G. A. Caswell, Doncaster, on behalf or the relatives of the late Mr. Axe.)

INTERESTING VETERINARY CASES.

A Few Notes by the Way.

BY MR. A. W. MASON.

Mr. MASON remarked that the cases might be of some use to the young veterinary practitioners. The first matter was a fracture of the humerus. The animal in question had to be cast for an operation on its teeth. It was a large cart horse, which he had twice previously cast for tumours in the shoulder. In view of the size of the horse, he naturally told his client that there was a certain amount of risk in throwing him. He, however, threw the animal with every precaution, being assisted in the operation, but when the horse rose from the floor, it could not move the off fore limb forward at all.

The next case which he had to bring before them was also one of fracture, and was very interesting. Some fourteen or fifteen years ago he was called in to see a foal, and he told the owner of the animal that he could not do any good, as there was a fracture of the femur. A week later he (Mr. Mason) drove to the place and remarked, "You have killed the foal?" The owner replying, "No." He then said that whenever the animal was killed he should like to see it. Seven days ago, after a lapse of fourteen or fifteen years, he received an intimation that the horse was going to be killed. He now produced the portion of the limb in the condition that it was at the time of death, describing it as a very interesting specimen.

Another case which he had to mention showed how simple it was to make a mistake. He went to the neighbourhood of Pontefract to see three horses, all having the same symptoms. When he arrived there he was told that there had been a fourth horse which had been seized in a similar way to the three animals, but that it died within fourteen hours "in great agony." Speaking of a hackney mare, he said that on opening her box the first glance made one almost positive that she was suffering from lockjaw. On getting nearer to the animal and examining more closely, the animal appeared as though bolted to the floor. Then on further investigation the symptoms of acute laminitis were found. The symptoms of the three horses were as follows: Intense amaurotic condition of the eye, increased temperature, hot and cold extremities, the limbs quite rigid, and there was quite difficulty in moving; pulse full and increased, temperature 106 degrees. At first glance it seemed as if the animals were suffering from tetanus, having extensive tetanic spasms. There was loss of urination, no action or increased action of the bowels, membranes injected of a rusty colour, no appetite or desire to drink, all the animals had food in the mouth, and only appeared to eat when the spasms of pain were most intense. One animal having suffered in the way described, and died within fourteen hours; three animals suffering in a similar way made one anxious to know what was the cause. He began to inquire as to how the animals were fed. The water was examined, and it was not of the best. It was found that the animals were getting a small quantity of wheat, and being fed with vetches. He must admit that he could

not understand the symptoms—that the small quantity of wheat flour given would account for these three animals—a hackney mare, a cart mare, and a two-year-old colt—being in the same condition.

Mr. FLETCHER: Were they in the same stable?

Mr. MASON: In the same yard, but not in the same stable. Proceeding, Mr. Mason said that when asked his opinion as to what the animals were suffering from, he replied that he thought they were suffering from poison; but whether vegetable or mineral poison, he was not prepared to say. On his second visit, however, he was assured that the cases were some of the most acute cases of laminitis that he had ever seen.

Mr. G. E. BOWMAN: When did the laminitis come on?

Mr. MASON: It was there at the time. Admitting that the man was telling the truth, I could not understand that the small amount of wheat flour would produce the fearful symptoms described, and cause one animal to die within 14 hours of its being attacked. I have never seen pain so intense since I have been in practice, and I can quite understand the previous horse, which had no medical attention, dying in 14 hours.

Detailing the circumstances of a further case, Mr. MASON said they related to an injury of the sternum of a fistulous character. He had had several of these cases in his professional experience, and it was his opinion that no injury of the sternum, which was of a fistulous character, was curable. He had a horse suffering in this way at the present time. There was acute inflammation between animal's fore-limbs. He had read some foreign writers on the matter, and one of them said that he used the actual cautery after syringing with opodeldoc.

The CHAIRMAN, at the conclusion of Mr. Mason's address, said the cases he had mentioned were of great practical interest.

Mr. CHAMBERS asked if the three cases of laminitis got better?

Mr. MASON: Yes, they all got better.

Mr. FLETCHER thought the cases related by Mr. Mason were quite out of the common line. There would, in the first instance, be great difficulty at arriving at a correct diagnosis of the cases. He asked whether the same servant fed the whole of the horses, which might have led Mr. Mason to believe that the animal had been "doctored." He had seen very acute cases of rheumatism, but they had not turned into liminitis, as in the caaes mentioned by Mr. Mason. He further inquired whether the vetches were old grown—full of seeds. He had seen horses very bad from eating vetches of that description. Like Mr. Mason, he should have supposed there had been poison of some kind, and most likely a vegetable poison. In regard to fistula in the sternum he had had a few cases of that kind to treat. He had found nothing better than a thorough incision and a common digestive ointment with turpentine mixed with it.

Mr. MASON, in regard to the cases of laminitis, mentioned another reason that he suspected poison. A brother of the owner of these animals had seven horses about three-quarters of a mile off. They were being fed with the wheat flour but not with the vetches, and there was no sickness. As to the condition of the vetches, they were just on the point of decay. They should have been cut earlier.

Mr. FLETCHER: I think that old-grown lints would produce the symptoms which Mr. Mason has described.

Mr. CHAMBERS said he could bear Mr. Fletcher out as regarded old-grown lints. They were very bad.

Mr. J. COOKE, first of all discussing the fracture spoken of by Mr. Mason, said it was an accident which might happen at any time to the best of veterinary surgeons. Some years ago, before he went to Scarborough, he had five accidents in casting horses. Consequently he adopted another means of cast-

ing. Feeding on wheat had a tendency to cause laminitis, and particularly in ponies. He had more cases of laminitis in ponies than in horses from feeding on wheat.

Mr. FLETCHER said that he had a case of accident many years ago. A client, with whom he had a contract, wanted a horse firing for spavin. There was very little the matter with the hocks, and he advised the owner to let the animal alone; but he would not do so, and the horse, which had been standing idle a long time, was cast with the usual care. The animal struggled violently while he and his son were firing it, and when they wanted it to get up, it could not do so. He went for the owner, who saw the agony of the animal. The bone was not fractured, but there was much fatty degeneration of the muscles. The animal had torn the muscles very badly. At the *post mortem* he could get his finger through the muscles. The matter remained a twelvemonth till he went for his account. The owner said that he (Mr. Fletcher) wanted nothing, but that he wanted something from him. He asked what the owner meant, and he replied, "You killed my horse." He (Mr. Fletcher) answered, "No, I did not, but the knacker did, and you ordered him to kill it." The owner then said, "But you injured him by casting him." He inquired whether mischief was meant or was it a joke, and the owner said, "I expect you to pay for him. I shall submit it to the profession and expose you, and do you a great deal of harm." He replied that if the account was not paid, he should submit it to another profession. The owner considered the matter and eventually paid the account. He never saw such degeneration of muscular tissue in his life.

Tuberculin.

Mr. H. SNARRY then related some experience which he had had with tuberculin.

Mr. FLETCHER thought there was a great deal in tuberculin, and that they might try many experiments with it.

Mr. PICKERING also believed it would be a great help in the diagnosing of tuberculosis. He asked, for his own information, what was the law with regard to the vendor of animals affected with tuberculous disease. In the last few months cattle had been purchased at the auction market apparently in a perfectly healthy condition, and the buyers had given a good average price for them. In three cases the animals were seized at the slaughter-house and condemned as being affected with tuberculosis. Did not they suppose that the vendor of these cattle would be more likely to know that the animals were suffering from the disease than the unfortunate purchaser or purchasers. He thought the person who sold ought to be liable for compensation.

Mr. GREENHALGH objected to the line of argument taken by Mr. Pickering. It was ridiculous to suppose that a man, knowing his cattle were suffering from tuberculosis, would take or send them to the market. It was a fact that the best bred beasts were the most liable to be affected with the disease. He had been surprised at the internal condition of some of the best beasts that he had ever handled alive.

Mr. PICKERING thought he had been misunderstood. Personally, he was of opinion that it was unfair to a purchaser that he should lose £17, £18, or £20.

The matter then dropped.

A Fox Terrier's Fracture.

Mr. F. SCOTT mentioned a case of fracture of the femur of a fox terrier, without displacement. On Wednesday, the 14th October the dog, which was about five months old, was run over by a heavy spring cart, a wheel going over part of his back and the hind leg. The animal ran to him howling with

pain and carrying the leg. He examined the limb carefully but could not find any fracture. He put the dog in a small kennel till the next morning, when, strange to say, he appeared sound, running and playing with other puppies without limping or evincing any pain. On the following Saturday the terrier was playing in the yard, and suddenly it gave a great howl and lifted up its leg. He examined the limb, finding a severe fracture. The animal was then poisoned. It had not met with any accident between the Wednesday and the Saturday.

Mr. SOMERS thought the explanation of fractures of the femur, and no displacement occurring at the time, was that the periosteum is exceedingly thick on the femur and will often hold the fracture together until some violent exercise displaces the bone by bursting through the periosteum.

Mr. CLOUGH pointed out that in this instance there was no periosteum where the fracture occurred.

Mr. J. CARTER (Bradford), Mr. P. DEIGHTON, Mr. SCRIVEN and Mr. MASON continued the discussion.

Mr. A. W. BRIGGS said the strong fibre over the muscle often kept the fractured bone together.

Mr. BOWMAN said that this summer he had a similar case of a hunter which had been kicked by a cart-horse.

The CHAIRMAN said his experience was that these cases of fracture without immediate displacement were comparatively common.

Veterinary Obstetrics, etc.

Mr. T. FLETCHER next gave some of his experiences of veterinary obstetrics and "prolapsus uteri." He observed that he had not chosen the subject because he had anything very new to lay before the meeting, but because he thought it might be of use to some of the youngest members of the Association, especially at a time when all kinds of motor power are being brought into use to supersede the horse. When such a thing occurred, the veterinary surgeon would have to give more attention to the disease of other domestic animals, and more especially the cow, the producer of our milk and butter.

When called to a case of calving or foaling, it was advisable to get as much of the history of the case as possible, so that they might judge whether the animal had been badly injured by someone previously. It was not unusual to call in the assistance of half the neighbourhood before the veterinary surgeon was sent for. Next make a thorough examination to know what position the fœtus was in. Here Mr. Fletcher related a case that he had a short time since where he thought he had two fœtus to deal with. As the animal would not stand up, he raised her behind as much as possible with bundles of straw. He attached great importance to position, to have the hindpart raised whether the animal was standing or lying, or the forepart raised when the fœtus could not be reached. In the case in question the hindpart was well raised, and after two hours' hard work he was in no better form than at the beginning. He had recourse to Reid's syringe, and pumped half a bucketful of warm water, to which was added a little soap liniment, with a little turpentine in it (sapo. tereb. liniment). When a great portion of the fluid had been pumped into the uterus he found that he could move the fœtus about, and separate the placenta from the legs and head, so that he was able to get a sharp hook into the back of the head and a rope on one foreleg, and then with the crutch (which, together with other instruments, was exhibited) push back what he thought to be the hind parts of a second fœtus. By continuous and gentle attention for half-an-hour the thing came away with a great splash. But there was not a second one. The fœtus was a full-grown calf with anchylosed spine, and was doubled round nearly to

a circle. The head, which was more like a football than a head, was packed close to the belly, and one foreleg was half the thickness of the other. The cow made a good recovery. Two months afterwards a very similar case occurred. He again adopted the pumping in of warm fluid, and he found that it greatly facilitated the operation. It was his intention to give the system a good trial. In cases of breech presentation, with the hind legs lying under and along the belly, he generally passed a blunt hook into the rectum of the fœtus and a cord round one or both thighs, and brought it away in the form it was lying in. He very seldom dismembered the fœtus, and when he did it was generally beheading them. There was no general rule to be laid down in obstetrics, but, like a good mechanic, think well before you begin to act. He would not enumerate the various positions of fœtus they met with, the description of which would fill a big book. He concluded with a description of his method of replacing the prolapsus uteri, and the instruments used by him.

A brief discussion followed, the following members taking part therein :— Messrs. H. G. Bowes, Newsome, Deighton, Whitehead, Cooke, H. Snarry, Scriven, and the Chairman.

Bovine Diseases.

Mr. WHITEHEAD had promised to contribute a paper on "A Few Bovine Diseases Met with in Every-day Practice," but the afternoon being advanced, he postponed its reading for another occasion.

The Retiring President.

Mr. FRANK SOMERS moved a hearty vote of thanks to Mr. Clarkson for the excellent manner in which he had discharged the duties of President during the past year. He observed that Mr. Clarkson had filled the presidency with great credit to himself and to the satisfaction of the members of the Association, and had done his utmost for its welfare.

Mr. WHITEHEAD, in seconding, said that he would have to follow a very good President.

Mr. COOKE supported, likewise testifying to the efficiency of Mr. Clarkson in the chair, and alluding to the satisfactory result of a new feature during the year of having at each meeting a series of short papers for discussion, instead of only one long contribution. Altogether, they had had a very good year.

The resolution was carried with acclamation.

Mr. CLARKSON, in reply, said he had some misgivings when he accepted the presidency, but he was very pleased to find that they thought he had filled the chair well. With regard to the change in the reading of papers, he thought the last two meetings went a long way to prove that the alteration was right. He thought he was correct in saying that the attendance that afternoon was the largest they had had for years.

The business having concluded, the gentlemen present were entertained to tea by the Leeds members of the Association.

FRANK SOMERS, *Hon. Sec.*

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE above association held a meeting at Newcastle-on-Tyne, on Friday, 20th November.

Mr. Geo. Elphick, President, in the chair. Among those present were :— Messrs. Jarvies, Ryder, Hunter, W. Hunter, Peele, Macgregor, Grieve, Dudgeon, Hunting, C. Stephenson, Moore, Craik, J. Connochie, Dalgleish, Aitken, Meek, Dotchin, Professors Hobday, and W. Owen Williams and Dr. Hunter.

Mr. Elphick was re-elected President, and Mr. Dalgleish was re-elected Secretary.

Professor HOBDAY gave a demonstration on chloroforming a mare, and then performed median neurectomy. Everyone seemed pleased with the professor's skill, and with the success of the operation. Professor HOBDAY stated, after seeing the result of the operation, that it had exceeded even his anticipation; he then read a most interesting paper on this operation.

Most of the animals that he had operated upon were "cabbers," some of them only fit for the knacker, but out of 38 operated upon, 30 had been successes.

It was not an operation to be performed indiscriminately for any lameness below the elbow, it was not of much value in lameness due to disease of the outside of the limb, but was good for those inside, such as splints, etc.

Mr. MACGREGOR opened the discussion, which was entered into by a number of those present.

Professor HOBDAY then exhibited various instruments for administering anæsthetics. He was of opinion that the dangers of anæsthetics were exaggerated. He was more inclined to blame the methods, and not the anæsthetics. He strongly advocated the administration of a greatly diluted anæsthetic, such as from 1 in 1,000 to 1 in 5,000 of air. In one instrument the air is *forced over* the chloroform, in another the air is *sucked over* the chloroform, and in the third the air is *drawn through* the chloroform. He prefers the second method mentioned, as by that method it is almost impossible to give it too rapidly.

The discussion was opened by Dr. HUNTER, of Newcastle, and carried on by various others present.

CONTAGIOUS DISEASES ANIMALS ACT, 1894.

SUMMARY OF RETURNS OF OUTBREAKS, for the four weeks ending November 14th, 1896.

ENGLAND AND WALES.

Pleuro-Pneumonia.	Swine Fever.	Glanders (including Farcy).	Rabies.	Anthrax.	——
None	Outbreaks confirmed 232 Swine slaughtered 5,762	Outbreaks reported 49 Animals attacked 81	Cases reported 14 Dogs destroyed as having been exposed to infection 2	Outbreaks reported 29 Animals attacked 44	

Glanders in London—35 outbreaks, 54 cases.

SCOTLAND.

None	Outbreaks confirmed 11 Swine slaughtered 164	Outbreaks reported 5 Animals attacked 18	None	Outbreaks reported 8 Animals attacked 12	

IRELAND.

Pleuro-Pneumonia.	Swine Fever.	Glanders (including Farcy).	Rabies.	Anthrax.	——
None	Outbreaks confirmed 15 Swine slaughtered 174	None	Cases reported in dogs 25 Other animals 9 Dogs destroyed, having been exposed to infection 39	None	

NEWCASTLE FARMERS' CLUB.

PROFESSOR MCFADYEAN ON "TUBERCULOSIS."

A WELL-ATTENDED general meeting of the Newcastle Farmer's Club was held on Saturday afternoon, November 21st, in the Town Hall Buildings, under the chairmanship of Mr. C. Stephenson, for the purpose of hearing a paper on "Tuberculosis," read by Professor J. McFadyean, principal of the Royal Veterinary College, London. Amongst those present were Sir Donald Smith, High Commissioner for Canada, Mr. J. Cameron Swan, Professor Solomon, etc.

Professor MCFADYEAN, in his paper, said the modern view of the disease was not that it was spontaneous in those inheriting weakness from their parents, but that it was purely contagious. The essence of it was not the formation of nodules or tubercles, but the invasion of the body by a parasite whose presence irritated the surrounding tissues, and thus determinated the formation of the tubercles. The tubercle bacillus was discovered by Koch, and though too small to be seen by the naked eye, microscopic and laboratory investigations had enabled them to learn that its growth was very slow, even under the most favourable conditions of temperature, and that unless it was kept at 90° Fahr. no growth would take place at all. They drew the conclusion that the germ, when voided from the body of a diseased animal, would seldom or never find in the outside world the conditions for growth and multiplication, though it might retain its vitality like a seed. The germ affecting one animal was bred in the body of a previously tuberculous animal or man, and in that respect the disease was like glanders or any other contagious disorder. Pointing out that whilst a healthy animal might receive the germs by actual contact with another, he said the commonest method of transference was indirect, the tubercle bacilli being voided on to the floor or walls of buildings. and afterwards affecting the healthy animals when dry and floating in the air. On grass there was less danger, for the greater space cattle had the less certainty was there of the germs entering a healthy animal's body, whilst another point was that although the tubercle bacilli retained vitality in the dark, they soon perished when exposed to sunlight. This explained why the greater proportion of tuberculosis was found amongst the highly pampered animals, those stalled all the year round, and those in badly ventilated premises, and the comparative exemption of those kept out of doors. As to the susceptibility of one breed compared with another, the speaker said that probably this did vary, though in this country circumstances seldom furnished a fair test. The disease seemed commoner amongst shorthorns, Jerseys, and Ayrshires than Herefords, Galloways and Highlanders, and his own

view was that no matter the breed the disease would not start in a herd without the introduction of the bacilli, usually in the body of an animal already affected. Dealing with the question of heredity, he saw that a few years ago it was held that in a considerable proportion of cases calves were really tuberculous before they were born, and that this was the chief way in which the disease was spread. An impartial review of the evidence had compelled a great many of them to abandon that belief, for investigation showed that tuberculosis in a new-born calf was one of the rarest of pathological curiosities. The evidence was that tubercle bacilli were exceedingly rare in new-born calves, rare in yearlings, less rare in two-year-olds, and common in adult cattle. Alluding to the identity of tuberculosis with consumption, he said that when this was discovered a degree of apprehension bordering on a panic prevailed, and it was thought by some medical men, that one of the main sources of consumption had been laid bare. But whilst the visibly diseased parts of cattle were always dangerous as food, it was only in rare cases that the edible portions of the carcase contained germs, and though the animal from which they were taken had been attacked by the disease, he pointed out that they were quite safe for consumption. That was fortunate, for had it been necessary in the interests of public health, to absolutely slaughter every tuberculous auimal and pay compensation, their difficulties would have been materially increased. The interest of the question to agriculturists was obvious, for apart from the identity of the disease with consumption in man, it was widespread, and if left unopposed was capable of inflicting serious financial loss. The public were doubly interested, as it cut off annually large numbers of cattle—how many they did not know—and this must tend to raise the price of beef. But the interest of the public was mainly in the fact that the disease was communicable to them. Considering the risks to which the public were exposed, he said there were good grounds for believing that milk was only dangerous when the udder itself was dangerous, and it was only in a small percentage of cases that this became infected. Tuberculosis of the udder was a condition easily detected. This suggested that a periodical inspection—not less than twice a month—of all milch cows by competent veterinary inspectors would go a long way to protect the public. Still this would cost half a million of money, and would not entirely remove the danger. A less expensive, but, unfortunately, less efficient safeguard would be to make notification of udder disease compulsory, and the sale of milk illegal. This, coupled with regular inspection, would lessen the danger. Neither would guarantee public safety. Still every person could obtain this guarantee without Government assistance, by boiling or steaming the milk. In reference to meat, it had been gravely asserted that human consumption frequently came from the butcher's stall. But the expectation that human consumption would be reduced by stamping out bovine tuberculosis was not entertained by any pathologist of repute. Almost every one, so many times in a year, consumed food that came from an animal that was tuberculous in some respect. That had no terrors for him, for as he had stated the edible portions only contained germs in rare cases. It was true that thorough cooking would rob the meat of its dangers, but they were not going to concede to the butcher the right to unrestricted traffic in tuberculous meat. The only way to prevent this was to abolish private slaughter-houses, to institute public abattoirs, and meat inspection by skilled officials. Such a system was wanted for the prevention of diseases other than tuberculosis, and was bound to come before long. After referring to the valuable aid tuberculin gave in diagnosing the disease, he described the French proposals for rendering notification compulsory, slaughtering the obviously infected animals, testing those suspected, and slaughtering those which reacted, and giving partial compensation. This, it was believed, would cost

£50,000, the estimate being that 1 per cent. of the cattle were affected. In this country the proportion could hardly be reckoned at less that five times that. If the Government were prepared to spend £200,000 for carcases seized, then the plan was practicable for Great Britain, and would soon make tuberculosis a rare disease among cattle. He questioned whether the question of compensation alone could settle the matter, and held little hopes of the Board of Agriculture being able to do anything at present. Meanwhile, he said the man with tuberculosis in his herd could do much for himself. If he continued to lose animals year after year, he was much to blame; for any veterinary surgeon up to the times could tell in twenty-four hours with tuberculin which of them were already infected. If some of them were really ill, or wasted, the best thing was to poleaxe and bury them. It was seldom, however, this would make a drain on the pocket. Most of the animals that reacted appeared to be healthy. They must be separated from the rest and made ready for the butcher as soon as possible. The most convenient time to tackle the disease was the spring, for then the animals reacting could be fattened out of doors without danger to the others. The premises must be disinfected; the ventilation made good. Having once got his stock free the farmer must try to keep it by not introducing any animal which did not come satisfactorily through the tuberculin test.

In the discussion the chairman held that sometimes tuberculosis was congenital and sometimes hereditary. If they were to have notification for cattle they should have it also in respect of human beings and pigs, for he believed as much tuberculosis was spread amongst cattle and pigs from human beings as from cattle and pigs to human beings. He agreed with the provision of public abattoirs.

Councillor BATY moved a vote of thanks to Mr. McFadyean, and urged that the provision of public abattoirs should be general and not local.

Mr. WILKINSON seconded, and the debate was continued by Messrs. W. Temperley, R. Trotter, C. Marshall, and others.

Mr. MCFADYEAN replying, said tuberculin was not only reliable, but absolutely devoid of danger. As to heredity, only 40 indubitable cases of tuberculous new-born calves were recorded in Europe. There was no relation between human consumption and tuberculosis, and in 999 cases out of a 1,000, human consumption came from human beings. He agreed with the inspection of foreign meat, and the compensation of butchers under the *bona fide* circumstances cited by the chairman. In answer to Mr. Wilkinson, he said the disease was commoner in dairy cattle than those kept in the open.

Mr. ELPHICK said that within the last few days he had inoculated a herd with tuberculin. A few weeks before the cow that stood No. 9 in the byre was destroyed in an advanced stage of tuberculosis. After the test was applied to the rest, No. 10, 11, and 12 reacted. The air-way in the byre ran from the direction of No. 9 to No. 12.

Sir DONALD SMITH, on the invitation of the chairman, afterwards addressed the meeting. It was with very great regret, he said, Canadian farmers found that within the last year they were not able to send their live cattle into England and Scotland to be fattened there, and give a profit, in the first instance, to those on the other side of the Atlantic, and then to the British farmer. It was the opinion, however, of the best farmers and citizens of Canada that the gentlemen who advised the Government to act as they did, acted in the best of good faith. Men of equal good faith, he pointed out, believed the course taken was wrong. He expressed the hope that the Canadians would adapt themselves to the altered conditions, and by means of the cold storage system, be able to send dead cattle to this country on equally advantageous terms to themselves, and in very large quantities.

DAIRY COWS.

MUCH has been spoken and written in praise of general purpose cattle. Practical men have lauded the breeds from which they could not fail to take superior steers and deep milking cows, and they have been most contemptuous in their references to ornamental animals from certain strains and breeds—thin fleshed steers and cows that were useless at the pail. The country must, no doubt, always have general purpose cattle. It is now everywhere recognised that a cow should be able to suckle her own calf. That is the fairly pitched minimum standard. But these are days of specialism. Farm and dairy have not been uninfluenced by the spirit of the age. General purpose cows are all very well in most cases, but their beef-making qualities, for instance, are of little account to the man who wishes a good and long-continued flow of milk. It is no doubt true that many fine milking cows put on flesh readily once they are dry, yet it is clear that one need not expect a heavy and long-continued flow of milk from animals which are always inclined to be fat. The ideal dairy cow should not, therefore, be a general purpose animal in a moderately strict sense. She need not necessarily be from a breed or cross which has been more or less specialised for "the pail," but she must go strongly towards milk-giving. In a word, the cow for the modern dairyman is a healthy, deep-milking specimen that does not lay on indifferent beef under any system of forcing. While in milk she should use the minimum of food for her own back. Many town dairymen try to have a combination animal, or one that will lay on a fair amount of beef during the forcing period, which begins five or six months after calving. Their purpose is, of course, to keep the animal so long as she will milk profitably, and then sell off fat. As cow beef now goes at a poor figure in the markets, even the town dairyman would in all likelihood be rather more in pocket with a specially deep-milking animal which would fetch at the finish £2 or £3 less than an average general purpose cow will do.

Perhaps no cows in this country are so good for the average dairyman's purpose as the north of England's shorthorns. Most of them are practically pure, and the majority have been bred for generations by men who had milk-selling and calf-rearing in view. In the best north of England herds shorthorn breeders pay great attention to the principle of heredity. The calves of the finest milking cows are kept to recruit the herds, and if a bull is needed from a strange stock the buyer must know the milk record of his dam. Men with high-class dairy cows will not hesitate to give a handsome price for an unpedigreed shorthorn bull which is known to be from excellent milking strains on both sides of his descent. A like rule is followed by a good many dairymen in the west and south-west of Scotland. The main difference between the Scots and the north of England men is that the former usually ask for a herd book record along with the milking one. Even, now, however, a fair proportion of cheesemakers pay much greater attention to the milk pedigree than to the formal records set down in the herd book. Breeders of Jerseys, Guernseys, and Norfolk redpolls lay much stress on a milking or butter-giving pedigree. America, however, is the great country for keeping milk and butter records. On this side of the water people are sometimes apt to be suspicious about the elaborate dairy arithmetic which reaches them from the west. Relatively slow-going Britains are not always sure that the complete looking decimals from the other side of the Atlantic have been actually worked out and checked on the spot. Yet there can be no doubt that dairymen in this country can still learn something from the Americans. They may sometimes smile at the neatly arranged tables of rations from "Out West," and may be inclined to think that a few of the deductions drawn by American

brethren need one or two connecting links, but they cannot fail to receive lessons in exactness and method.

Two or three years ago British dairymen and agricultural experts in general were set a-thinking by a laconic pronouncement from an American agricultural college that quality of milk was ruled not by feed, but by breed. The short and sharp assertion was backed by a series of tables, based upon practical experiments, and for a time the old views seemed to be in peril. Every one with experience of milking stock knew that certain breeds and animals tended to give rich or poor milk, but they would not believe that a good butter cow, for instance, would keep up her standard of quality under conditions of feeding much below her normal. The American contention forced a number of enlightened dairymen in this country to test the formerly accepted conclusions. Mr. John Speir, the widely known dairy farmer and general agriculturist of Newton Farm, near Glasgow, put the new views to thorough trial in a series of experiments, beginning in May of last year, and ending by the first week of January. Starting with pasture, he worked the cows regularly through rations of green vetches, green vetches and dried grains, Indial meal, barley meal, and green Italian ryegrass, and finished with decorticated cotton cake, treacle, potatoes, and second cut hay. His main conclusions, as given in the last volume of Highland and Agricultural Society Transactions, are—(1) That at least two foods—young fresh grass and grains—have the power of lowering the percentage of fat in the milk, and that vetches and decorticated cotton cake have a tendency to increase it; (2) that most changes of food seem to be followed by an increase of fat in the milk, but that there is a strong tendency for the milk to return to its normal condition; (3) that solids other than fats in the milk seem to rise or fall in much the same manner as the fats, although to a less degree; (4) that an increase of oil in the food does not seem to give any increase of fat in the milk; (5) that the effect of food is more marked in the quality of the butter produced than in the quantity. He is further of opinion that some foods produce milk from which a much greater percentage of butter can be recovered by churning than others—that quality of butter and its watery condition or the reverse are greatly due to the nature of the foods consumed by the cows. It will thus be seen that old conclusions of practice and experience are substantially backed by Mr. Speir's experiments.

A dairyman who wishes to make the very most of his business must, therefore, choose his cows with care and judgment, and he must give constant and intelligent attention to their feeding. His cattle need not necessarily be pure bred. Some of the grandest milking and butter cows are cross-breeds. Cows from excellent milking or butter stocks will come up to expectations as a general rule, but every animal ought, if possible, to be systematically tested at the outset of its milking career, or when it changes hands. It does sometimes happen that a poor milker will be bred from the finest dairy stocks. There is always more or less of a tendency towards reversion of an undesirable kind, especially in strains which have been specialised for only a comparatively short time. A milk-seller must always watch depth at the pail, and he may make fair use during the colder months of roots, distillery and brewery grains, and other foods which tend to increase the flow. A butter-maker cannot neglect quantity, but his cows must naturally run to quality or fat in the milk. And they can be helped in the byres by rations of cakes and meal. A town dairyman may, as things go, be of opinion that he is in most cases better recompensed by good general purpose animals than by deep-milking "bags of bones." Yet the yearly waste of cow life in town and other dairies is a matter to be regretted. There cannot be a doubt that rural dairymen who breed most of their own stock would find special purpose cows the more profitable by far in the end. A cow which gives from 600 to 700 gallons of

milk in a year, or one which has a record of 10 or 12 lbs. of butter per week when at her full flow, is almost entitled to a "pension" after five or six years' milking. In the dairy districts of America and over a great part of the Continent of Europe, men believe in special purpose cows, and a leaf out of their book might with great advantage be taken in this country.

Army Veterinary Department.

Extract from London Gazette of November 17th, 1896.—"The Queen has been graciously pleased to give orders for the following appointments to the Distinguished Service Order, and promotions in the Army in recognition of the services of the under-mentioned officers during the recent operations in the Soudan:—To be Companion of the Distinguished Service Order, viz., . . . Veterinary-Captain G. R. Griffith, Army Veterinary Department (employed with Egyptian Army). . . ."

Arrivals and Departures.—The under-mentioned veterinary officers arrived from India, per s.s. "Victoria," on 14th inst., having completed a tour of service in that country:—Veterinary-Captain J. A. Nunn, C.I.E., D.S.O.; Veterinary-Captain R. W. Burke; Veterinary-Lieutenant E. W. Larnder.

Veterinary-Captain L. J. Blenkinsop embarked 20th inst., for Egypt, to take up the duties of Senior Veterinary Officer in that country, to relieve Veterinary-Major J. Hammond, who returns home on retirement.

Veterinary-Captain R. Moore arrived from South Africa, 20th instant, and is posted to Aldershot for duty with the Royal Engineers.

Veterinary-Lieutenant W. D. Smith arrived from Egypt, 23rd instant, on three months' leave of absence.

Veterinary-Major S. Duff-Gillespie, on leave from India, was brought on the Home Establishment, 10th inst., and ordered to join for duty at Woolwich on 14th inst.

Veterinary-Captain A. J. Haslam arrived at Woolwich from Dublin, for duty on 5th inst.

Veterinary-Lieutenant F. Eassie, joined for duty at Aldershot on the 10th inst.

The undermentioned veterinary officers embarked for a tour of service in India on the 10th inst.:—Veterinary-Major B. A. W. Powell, Veterinary-Lieutenants T. W. Rudd and W. O. C. Dawson.

Veterinary-Lieutenant W. N. Wright also embarked on same date, on return from sick leave of absence.

Veterinary-Captain D. C. Pallin proceeded to Canterbury from Shorncliffe on 1st inst., and has taken over veterinary charge of the Cavalry Depôt.

Veterinary-Captain J. B. Savage left Canterbury on 1st inst., and took over veterinary charge of the Royal Artillery at Shorncliffe from Veterinary-Major J. Burton, who proceeded to Dublin for duty.

Veterinary-Lieutenant T. E. W. Lewis proceeded to Woolwich with 3rd Dragoon Guards from Shorncliffe, on 29th ult.

Veterinary-Lieutenant F. Eassie arrived from India, 3rd inst., on completion of foreign tour.

Veterinary-Lieutenant R. H. Holmes arrived at Athlone from Dublin, for duty with the Royal Artillery.

Veterinary-Lieutenant W. S. Anthony joined at Aldershot for duty on 2nd nst., on appointment.

RELIANCE TAIL SCISSORS.

PATENTED.

The above woodcut represents a new form of scissors for cutting or trimming horses' tails. With this instrument there is not the slightest chance of the hair slipping, as with those at present in use. It is so constructed that one blade consists entirely of teeth, which are sufficiently long to prevent the hair from slipping when once caught; there is another advantage, they do not become blunt like ordinary scissors.

They have been practically tested, and found to be the best as yet brought before the notice of the profession.

The patentees and manufacturers are ARNOLD & SONS, of West Smithfield, London. Price 12s. 6d.

Extracts from Foreign Journals.

CHINOSOL, A NEW ANTISEPTIC.

CHINOSOL is a neutral combination of oxychinolin, which also separates from this combination on application, and develops as it comes into existence (*in statu nascendi*) great antiseptic power. The Hygienic Institute of Munich has discovered by experiment that chinosol, while relatively non-poisonous, has a considerable effect on bacteria and checks their growth. Professor Kosmann has used chinosol for several months in place of sublimate and carbolic acid, and has never during that time had any experience of wound infection; there were no toxic symptoms and no eczema. When dusted as powder into open wounds, the preparation exercised no corrosive or irritating influence; it does not attack the hands in any way, even when one rubs it in in too strong solutions, as of 1 in 500 and stronger, continuously or repeatedly on the same day. It has a faint but not disagreeable odour. One drawback is that chinosol gives a yellowish tint to one's hands and linen, but this may be removed by washing with clean water. As the preparation is practically non-poisonous, and possesses the antiseptic powers of sublimate without injuring the hands; as it is, like sublimate, capable of being measured out in doses, and, finally, as it is obtainable in soluble tablet form, it is likely that chinosol is destined in the future to supplant sublimate to a great extent.—*Centralblatt für Gynœkologie.*

ASBESTOS AS BANDAGING MATERIAL.

Dr. Wolynsew, on the basis of numerous experimental investigations and clinical observations as to the qualities and applicability of asbestos, arrives

at the following conclusions:—(*a*) the specific weight of asbestos is higher than that of wadding and gauze; (*b*) asbestos is less porous than these two substances; (*c*) it absorbs less water than other bandaging material in common use; (*d*) evaporation from the surface of the wound takes place under an asbestos bandage slower than under any other material, but at present, in the absence of reliable methods of investigation, it is still a question which is the best bandaging material so far as evaporation is concerned; (*e*) asbestos is not so good a conductor of heat as wadding, but on this point also there is a lack of reliable methods of investigation; (*f*) asbestos absorbs solutions of albumen better than wadding or gauze. Although Dr. Wolynsew's clinical observations are not yet sufficiently numerous to allow a conclusive judgment on the applicability of asbestos as a bandaging material, yet this much may already be said—that asbestos does not irritate the wounds, takes longer to wet through, and absorbs blood and pus more easily. The cheapness of the material must be reckoned an advantage, for it is possible to apply it several times over, provided that after each application it be treated with chlorine.—*Deutsche Medic. Zeitung.*

SUBCUTANEOUS ABSORPTION OF ALIMENTARY SUBSTANCES.

In all cases in which the taking of food in the natural way is impossible, or attended with danger to the patient, the custom hitherto has been to administer nourishment by means of clysters. It is quite possible in this way to introduce into the system all the nutritive materials necessary for the support of the body, but it is almost impossible to introduce the necessary quantities. In addition to this, we have the fact that food-clysters when frequently applied have the effect of irritating the rectum, whereby they come to be ejected after a very short stay in the intestines and so the chance of being absorbed is very much reduced. For a long time past, therefore, attemps have been made to introduce nourishment into the system subcutaneously, but, unfortunately, such attempts have, until quite recent times, shown no tangible results. Leube first suceeeded, a short time ago, in introducing fat in the form of butter into a dog subcutaneously; he introduced a considerable quantity (3 lbs. in six weeks), and so successfully that it was absorbed by the system and worked into it. Leube was, however, unable to introduce sugar and albumen subcutaneously. Dr. Voit, experimenting solely on the human subject, has used only very thin solutions of grape-sugar, and has thus taken an opposite course to that of Leube. He has succeeded in injecting successive doses of a 10 per cent. solution, beginning with 10 cubic centimètres (= about three-fifths of a cubic inch) and ending with 1,000 cubic centimètres (= 61 cubic inches = $1\frac{3}{4}$ pints or 1 litre) at one time without any bad effects. Sugar having thus been harmlessly injected into the body subcutaneously, the question arose whether it was not immediately expelled in the urine or whether it was really consumed. Experiments made with this object showed that of 10 grammes (= $\frac{1}{3}$ oz. av.) of sugar injected no part was expelled in the urine, of 60 grammes no perceptible traces were found; only when 100 grammes were injected all at once did the urine show $2\frac{1}{2}$ per cent. of sugar. Now, 100 grammes (= $3\frac{1}{2}$ oz. av.) of grape-sugar equal an addition of 410 *calories* (a *calorie* is the quantity of heat necessary to raise the temperature of a kilogramme, or 2·2 lbs. of water, one degree centigrade), and therefore represents about the third of the caloric which a man in reduced bodily condition requires even in a state of complete rest. It would thus be possible to reduce considerably the consumption of albumen by means of injections of grape-sugar.—*Münchener Med. Wochenschr.*

LOCAL ANÆSTHESIA WITH HOT SOLUTION OF COCAINE.

Dr. Costa, of Genoa, recommends, even for lengthened operations, local anæsthesia by means of injections of a solution of cocaine heated to 120°—130° Fahr. This treatment has, he says, the following advantages:—(*a*) much weaker solutions than usual are capable, when heated to 122°—130° Fahr., of producing strong anæsthesia; (*b*) local anæsthesia follows almost immediately on the injection of heated solutions; (*c*) the tissues over a wider extent become anæsthetised; (*d*) the toxic effect is reduced, as the solution is weaker. Dr. Costa generally uses solutions of 1 in 200 to 250. It must be noted that the solutions ought not to be allowed to boil nor to cool too rapidly.—*Münchener. Med. Wochenschr.*

THE STERILISATION OF CATGUT.

Catgut, which in its raw state is so extraordinarily productive of infection, offers such obstacles to sterilisation that many surgeons have desired to banish it entirely from use as part of their bandaging apparatus. But as catgut still remains the only absorbent sewing-material, constant attempts are made to sterilise it. Dr. Saul, in a paper read before the Berlin Medical Society, states that he has tried lately boiling in alcohol, with the best results, that is, the catgut stands the process well, and the degree of sterilisation is high. By the addition of water (up to 20 per cent.) a considerable increase of disinfective value is produced, but, on the other hand, not by a combination of alcohol and carbolic acid. If, however, water and carbolic acid are added to the alcohol, a very high degree of disinfective value is reached. The most efficacious combination consists of 85 parts of alcohol, five parts of carbolic acid, and 10 parts of water; by this, splenic fever-spores are destroyed in ten minutes.—*Berliner Thierärzt. Wochenschr.*

AN ENCYSTED HAIRY TUMOUR IN A HORSE.

Surgeon Grams, of Rixdorf, near Berlin, writes to the *Berliner Thierärzt. Wochenschr.*, an account of a curious case that came under his notice. On examining an 8-year-old Belgian horse in fine condition, he found in the upper third of the shoulder region, about a hand-breadth behind the shoulder-blade, a small fluctuating swelling, which the owner of the horse attributed to the bite of a fly. Grams suspected pus in the swelling by reason of the fluctuation, and was going to puncture it at once with a pointed knife. But the swelling offered considerable resistance to the knife, a sign that the wall of the neoplasm was tolerably strong in its texture. Grams gave a short but firm push with his knife, and thereupon a quantity of greyish-black pus was extruded which had no unpleasant smell. After splitting up with the bistoury, a fairly large ball of black hair was withdrawn from the swelling; this filled up nearly its whole cavity. As the swelling showed itself to be a completely capsuled neoplasm, lying in the subcutaneous and adipose tissue quite independent of the outer skin, Grams found it necessary, in order to avoid further gatherings of pus, to extirpate the whole thing. It was then found that the swelling was of the bulk and shape of a hen's egg; it was 5 centimètres (say 2 inches) long and 3 centimètres (say 1 1-5th inches) broad. The tough, firm wall was 1½ millimètres (say 1-16th inch) in thickness; its inner surface was quite black in colour, except that the lower end had a white point, and it was furnished with black hairs, some of them as long as 1 1-5th inches. The wound healed beautifully, and left a small cicatrice.

Notes and News.

SPIROPTERA AND THE TICK PEST.—The Melbourne correspondent of the *British Medical Journal* reports the following: The spiroptera has been found for the first time in some of our animals. Dr. Brown, the Government Inspector of Meat, has just discovered it in a tumour taken from the stomach of a horse. The mealworm, he considers, contains the encysted larvæ, and these are eaten in the fodder of the cattle. Mealworms are found in grainhouses in Melbourne, and probably have been introduced from elsewhere. The undoubted spread of the tick pest has been causing alarm in pastoral circles, and an inter-colonial conference has been called together for the purpose of dealing with its prevention. As many as 16,000 ticks have been counted on one animal. The propagation takes place in the following manner: Each tick lays about 2,500 eggs, dropping from the animal to the ground for the purpose. A healthy animal after awhile lies down on the same spot, and carries away the eggs or the young ticks, and thus the disease spreads rapidly. In the coastal districts of the hot regions of Queensland it is very fatal. At one place 800 bullocks were killed within six weeks by the tick. Whole dairy herds have been entirely destroyed. All kinds of remedies have been applied, including kerosene and turpentine, and the only thing found to be of any use is long immersion in an oil bath. Three sorts of oil are used, namely, mineral oil, cotton oil, and Apollo oil. It is believed that the oil acts by smothering them. Dips, with yards attached, cost £250. They have water in the bottom and oil floating on the surface. The infected animal is driven slowly through, and passes through the oil bath on entering the dip and on emerging, and it then remains for a time on a drainage-stage outside whilst the excess of oil drips off. The blood of the tick contains the micro-organisms of what is known as Texas fever or "red water." It was proved by inoculating animals quite free from Texas fever with the blood of the tick that in every case they developed Texas fever. Every precaution has been taken in Melbourne to prevent hides coming from Queensland unless they have been effectually soaked in brine.—*British Medical Journal.*

ELEPHANTS.—Since the death of that remarkable expert, the late Mr. Sanderson, there has been no specialist in the East, sportsman or naturalist, skilled in the capture and treatment of elephants. The consequence has been serious mortality among the expensive establishments maintained by the Government in South India. Every trained elephant is worth at least £500. From his experience in Ceylon, the new Governor of Madras has made a thorough inquiry into the capture, treatment in health and sickness, housing and sale of these noble animals. The forest officers have been instructed to select and train the most promising elephants in their native district in South Malabar. They are, curiously enough, directed to train them "in the Malayalam language." All officers entrusted with State elephants are told to procure and study J. N. Steel's veterinary manual on the elephant, that they may know how best to feed and house them in wet and cold weather. The "mahout," or attendant, whose charge escapes sickness during a whole year is to receive an annual present. The death of an elephant is to be carefully reported to Government, accompanied by the fullest and most accurate information as to the cause of death.

CRIBBING CURED BY THE ELECTRIC CURRENT.—A valuable six-year-old trotting horse formed the habit of crib biting on the manger and parts of the stall. It became so persistent that he fell a victim to indigestion. The owner put in an induction coil, a three-cell battery, a flexible cord led from it to the horse's back under the surcingle. The stall was lined with tin where the horse had been chewing. The connection was made so that when he touched

his lips to the tin at any point the electric current ran through his head and along his spine to the surcingle. This would cause him to turn away with disgust, and after vain efforts to pursue his former pastime, nothing could induce him to again attempt it, and the result is that he is now eating and digesting his food naturally.—*American Veterinary Review.*

THE RINDERPEST IN SOUTH AFRICA, CAPE TOWN, SEPTEMBER 16TH.—Rinderpest has made its appearance on a farm 15 miles from Vryburg, and a herd of cattle of about 600 has been shot. This outbreak is considered by the authorities to be traceable to an adjoining farm where the disease existed for a fortnight without being reported. It is expected that other heads in the vicinity will be destroyed. Cattle are dying rapidly at Morokwens Reserve, and the natives are now killing their own animals and making biltong. A deputation came from Kimberley to Cape Town and discussed with Mr. Faure, Secretary for Agriculture, the means of preventing the further spread of the rinderpest. Mr. Faure agreed with the suggestion made by the deputation to close certain roads and employ more police, and also to appoint a committee in Kimberley to work with the Rinderpest Commission at Vryburg. He announced that wherever there were centres of infection now arising, it was the intention of the Government to destroy the cattle, because it was recognised that the only way of eradicating the disease was to stamp it out at the centres of infection.

Reviews.

BACTERIOLOGY AND INFECTIVE DISEASES. 4th edition. By EDGAR M. CROOKSHANK, M.B., pp. xxx. and 715., med. 8vo. 21s. nett. London: H. K. Lewis.

If it were necessary to demonstrate the enormous and rapid strides that the science of bacteriology has taken recently, one would only require to enumerate the numerous papers, text-books and new editions that have made their appearance during the past few years.

The volume at present under review is a new edition of Crookshank's Manual of Bacteriology so reconstructed, revised, and enlarged as to be virtually a new work. That it is only six years since the last edition was published is in itself a guarantee of the extreme popularity of this manual. That the present edition has been brought well up to date will be readily admitted by anyone looking over its pages. We are told by the author, in his preface, that twenty-six chapters and one hundred and thirty-three woodcuts and photographs have been added. A noticeable feature, and one which will recommend itself to the veterinary practitioner, is the considerable extension of the portions devoted to clinical facts and to the causal agents of diseases of domesticated animals.

The book is divided into three parts; the first dealing with theoretical and technical questions; the second with the etiology and prevention of infective diseases—a section of particular value to the practitioner; and the third to the systematic and descriptive classification of bacteria. In addition, there are five appendices, dealing with Yeasts and Moulds, Hæmatozoa, Psorosperms, Apparatus, etc., and Bibliography, as well as a supplementary appendix on the recent final report of the Royal Vaccination Commission, with which the veterinary surgeon will be already familiar from the excerpts in the lay and scientific papers.

The first chapter is new, and deals with the history of bacteriology from the time of Athanasius Kircher and Antony van Leeuwenhoek to the present day; we need hardly say that this is interesting and instructive reading.

An exhaustive chapter on the chemical products of bacteria is also new.

It is only natural and right that the subject of antitoxin and serum therapy—a subject of great fascination and infinite possibilities—should find a prominent place in a work which makes pretensions to being well abreast of modern discovery and thought. The following, on tetanus antitoxin, is of considerable interest:—

"Antitoxin for use in the serum treatment of tetanus is obtained from the horse. The tetanus bacillus is cultivated in an atmosphere of hydrogen, in flasks specially constructed for the purpose. In about a fortnight the cultures are extremely toxic. The toxin is obtained free from bacilli by filtration through porcelain. Injections may be given daily, subcutaneously or intravenously, beginning with 1 c.c. of iodised toxin, and gradually increasing the dose until the pure toxin may be injected without danger.

"Roux and Vaillard produced immunity in about three months. When a few days have elapsed after the last injection, the blood is drawn, by means of a trocar and cannula, from the jugular vein into a sterilised glass vessel, and set aside to coagulate; next day the serum is drawn off with a pipette and used in the liquid state, or dried in a vacuum over sulphuric acid and subsequently powdered. When required for use the powder is dissolved in cold water. About five grammes are used for a dose."

What follows, however, is not very encouraging to the clinician desirous of trying this mode of treatment. The author goes on to say, "The result, so far, of the employment of tetanus antitoxin in animals suffering from tetanus is disappointing, and the serum treatment is not likely to be of much value in veterinary practice."

Nothing has given greater impetus to the dissemination of bacteriological knowledge than photo-micrography, for, by its means the bacteriologist can demonstrate organisms to a room full of people with the greatest of ease. Professor Crookshank has fully recognised the utility of photography, and devotes a chapter to the explanation of the various methods of the manipulation of photographic apparatus, &c. We are surprised, however, to find that no mention of the production of lantern-slides has been made, though their value for teaching and demonstrating purposes is undeniable.

The chapter devoted to the consideration of the causal agent of anthrax will be found specially interesting on account of the very full description, not only of the bacillus and the means by which it may be demonstrated, but also of the methods to be adopted in the stamping out of the disease.

Every veterinarian will, we think, concur in the following:—

"A farmer with a case of anthrax must be made to realise the fact that an enormous quantity of poisonous material has to be dealt with. In fact an infected animal is more dangerous when dead than alive. . . . Every possible precaution must be taken to prevent the blood of the dead animal from contaminating the pasture, byre, or water supply. The rest of the stock should be removed from the pasture or cowshed where the disease has broken out. It is desirable to give a complete change of food and water, and the whole of the stock should be examined every day for a week, and any animals showing a rise of temperature should at once be isolated from the rest. Preventive inoculation has been recommended to protect the stock, but there is not sufficient evidence of the safety of the process to lead to the adoption of this treatment. . . . To disinfect the pasture, the best plan is a heavy top-dressing of lime, and after six weeks stock may be readmitted, though not without some risk."

Even in these days, incredible as it may seem, the veterinary profession is not entirely destitute of persons who doubt the specific character of anthrax, and who base their scepticism upon the well-known fact that the disease may break out on farms where such a thing has not happened for many years or

even within the memory of the proverbial oldest inhabitant. Perhaps the following quotation may do something to alter their views :—

"The spores of the bacilli may get into the soil, and may remain there in a dormant state for many years. . . . Anthrax has been known to break out among cattle grazing on a field where several years previously some Russian hides from infected animals had been buried. By some means or other the spores may contaminate the grass, and hay imported from an anthrax district may start the disease on a farm on which it had never been known to occur. The spores may in a similar way be introduced with blood manure and bone manure, and with refuse used as manure."

Swine fever is provided with a chapter to itself, and illustrated with photographs and coloured drawings of a very high and instructive character. The various organisms isolated and described by Klein, Salmon, Smith, Schütz, Reitsch, Jobert, and M'Fadyean, are described, but the author concludes with the pregnant statement that "we are justified in concluding that the contagium has not yet been discovered."

Tuberculosis, of course, is treated of in a lengthy chapter, one part of which is devoted to "Tuberculosis in cattle," with the consideration of its transmissibility from man to cattle ; and tuberculosis in relation to the public milk supply. The author says :—

"There is not the slightest doubt that when the udder is involved, the milk is highly virulent to the lower animals, and presumably is, therefore, dangerous to man."

Actinomycosis is discussed throughout thirty-four pages, a due amount of which treats of the bovine variety.

Foot-rot is illustrated by the drawings with which veterinary surgeons will be familiar ; they being from Professor Brown's pamphlet.

In discussing louping-ill, we are surprised to find that no mention is made of Professor Williams' experiments and conclusions.

Other diseases of domestic animals, such as glanders, tetanus, and rabies &c., are considered from a bacteriological point of view, but the limits to our space forbid more than a mere mention of the fact.

We should like to point out an error which occurs in the section on infectious pleuro-pneumonia. On pages 239 and 240 two plates are ascribed to Hamilton, whereas they will be readily recognised as coming originally from Williams' "Principles and Practice of Veterinary Medicine."

From the quotations we have made, it will be seen that the work is most exhaustive and instructive. We can only say that it is replete with good things, and should find a place, as a book of reference, upon the shelves of students and practitioners alike.

LES INDUSTRIES DES ABATTOIRS. Par THEODORE BOURRIER. (Paris: J. B. Baillière et Fils.)

This useful little book is a compendium of information on all matters connected with the feeding and preparation of animals for the market, with the various modes of slaughter practised in France, with the inspection of carcases and the disposal of the various kinds of meat. It is well illustrated with its 77 woodcuts, and is the result of much care and industry on the part of its compiler. A list is given of the various kinds of cattle consumed as food in France, with a short description of the characteristic features of each. Here, for example, is a short account of the Angus breed :—"As regarded from the butcher's point of view, the Angus oxen exhibit rare perfection. Without horns, they are distinguished by the lightness of their head, the breadth of their chest, the development of their hinder-quarters, and the cleanness of their limbs. They are quite equal to the Durham breed in rapidity of growth and in the quantity and quality of flesh which they produce.

They are known by their uniform black or dark brown coat; their skin, which is very soft and pliant, is covered with fine, silky hair; their flesh is nicely streaked and attractive, and it is succulent and nutritious." After this we have a chapter on the slaughtering of cattle, with a description of the Jewish method; then follows information as to the disposal of the various products, the flesh, the blood, the fat, the skin, and the offal. The same minute treatment is given to the calf, the sheep, the goat, the pig, and—the horse! It does sound strange to our English ears when a Frenchman talks, as does M. Bourrier, of horse-soup, roast horse, *ragoût* of horse, horse *à la mode*, and horse-pie. It will be a long time before such items appear on our hotel menus.

Part third of this little book is perhaps the most interesting to the veterinary surgeon. In it M. Bourrier gives rules for the inspection and judging of the different kinds of flesh-food, describes the appearance of wholesome and of unwholesome meat, and instructs the surgeon as to the means of detecting how the animal has been fed. A list follows of the principal diseases which afflict the domestic animals and of the appearances presented by the organs and tissues of the patients, so that the inspector can with a very little trouble decide at once whether the flesh is fit for human food or not. An interesting chapter is devoted to the various modes of preserving meat, by freezing and otherwise, and illustrations are given of the machines and instruments used for this purpose. We heartily recommend this little book to those of our readers who are veterinary inspectors—provided they have not forgotteu the French which they knew when they passed their preliminary. For such men this book is a veritable vade-mecum, perfectly clear and simple in style and arrangement, and yet thorough and exhaustive.

DIE KRANKHEITEN DES HUNDES UND DEREN BEHANDLUNG, VON J. B. ARNONS. (Berlin: Richard Schoetz). DISEASES OF DOGS AND THEIR TREATMENT, BY J. B. ARNONS.

We must apologise to the courteous publisher of the *Berliner Thierärztliche Wochenschrift* for having overlooked this valuable publication so long. It is certainly not because we think little of it, but only by accident that our review of the work has been deferred. Dr. Arnons has given us in his little book a wonderfully full and yet succinct account of the diseases which afflict dogs. He has pretty well exhausted his subject and he has given us therapeutic instruction to which we acknowledge ourselves greatly indebted. The book is divided into sections treating of infectious and intoxicant diseases, constitutional ailments, diseases of the respiratory system, of the digestive organs, of the abdomen, of the kidneys, of the heart and of the bladder, likewise of the nervous system, of the limbs and of the skin. It forms thus a survey of the whole category of canine diseases and will well repay perusal. We should like to see a translation of the book into English, and heartily recommend the task to any one of our readers who has the leisure and the skill.

Obituary.

Felix Delany, Pembroke Square, S.W. .. .. .. May, 1841.
Anthony Prescott, Manchester .. .. April, 1871.

Communications, Books, Journals, etc., Received.

Veterinary Record; Veterinarian; American Veterinary Review; Modern Medicine and Bacteriological Review; Cape Colony Agricultural Journal; Tuberculosis Investigations, United States Department of Agriculture; Annual Report, Board of Agriculture; Oliphant's Law of Horses; Crookshanks' Bacteriology and Infective Diseases; American Medical and Surgical Bulletin; Catalogue Général Budapest Exposition, 1896.

Recueil de Médecine Vétérinaire (Alfort); La Presse Vétérinaire (Paris); L'Echo Vétérinaire (Liége); Annales de Médecine Vétérinaire (Brussels); Berliner Thierärztliche Wochenschrift (Berlin); La Clinica Veterinaria (Milan); Il Nuova Ercolani (Pisa); La Revista Veterinaria (Buenos Aires), La Gaceta Médica de Costa Rica; The Veterinary Magazine.